1986 Quinquennial Review

BACKGROUND PAPER No.8

Review of
Transportation Planning
in the Central Area
1975-1986

City of Toronto Planning and Development Department
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1 Introduction

1.1 The 1986 Quinquennial Review: Background Papers

The City of Toronto's Official Plan contains provisions that require a review at five-year or quinquennial intervals of certain aspects of the Plan, particularly those relating to the policies of office deconcentration. As part of the research and analysis leading to the 1986 Quinquennial Review, a series of background papers covering a range of topics relating to office development, employment growth, population change and the utilization of the transportation system in the Central Area will be published.

The subject report, **Review of Transportation Planning in the Central Area, 1975-1986,** constitutes Background Paper No. 8. This Background Paper deals in some detail with the evolving relationship between land use and transportation planning in the Central Area over the past ten years and the implications for future commercial development downtown and elsewhere in the Metro Region. Much of the material discussed in this report is presented in an abbreviated form in the 1986 Quinquennial Review **Overview** document. Although the two reports have considerable overlap, the Background Paper permits an extended treatment of the transportation issues to be consolidated in a single source for ease of reference.

A number of other reports will also be published shortly which supplement Background Paper No. 8. As part of the joint Metro/City "Central Area Monitoring Program", reports will be forthcoming on the latest traffic counts at the Central Area cordon as well as the results of two surveys conducted in 1986 regarding the arrival patterns of workers at downtown office buildings and the travel to work patterns of Central Area residents. A sub-committee of the Economic Development Committee is also currently reviewing a number of consultant studies which the City commissioned to investigate future levels of employment growth in the Central Area, with particular attention being given to the impacts of technological change on the office sector.

1.2 Executive Summary

1.2.1 The Central Area Plan: Context

The Central Area Plan was conceived over the period 1973-5 and approved by City Council, with amendments, in January, 1976. Following a lengthy hearing, the Ontario Municipal Board approved the Plan, with modifications, in June, 1978 and the final approval of the Provincial Cabinet, which included further modifications, was given in February, 1979. Regarding the transportation aspects of the Plan:

- transportation policies were part of a larger strategy to control downtown office development and promote the regional policy of deconcentration.
- the basic approach was to limit the amount of Central Area office development to within the capacity of the existing and committed transportation system as defined in 1975.
- on the basis of transportation capacity, a recommended development control level of 6.5 million square metres (70.5 million square feet) of office space, along with appropriate review limits and dates, were established for the Central Core area.
- Sections 7.2(b) and 7.5 of the Official Plan, which limit future Central Area road and transit improvements, were approved as part of the overall strategy and City Council subsequently adopted further restrictive transportation policies in 1981 in the form of Official Plan Amendment No. 170.

1.2.2 The Central Area Plan: In Practice

The original Plan proposals underwent considerable modification during the approval process and further changes have resulted from subsequent Official Plan amendments to land use controls in the Central Area. As a result, in the long run there will develop an imbalance in the development capacity of the Plan and the planned capacity of the transportation system to accommodate such growth. What has happened is:

- land use controls in the Central Area have been modified by:
  - increasing permitted commercial development levels;
  - extending permitted areas of office development beyond the Central Core;
  - allowing commercial development rights to be transferred from one area to another.
- it is estimated that current development controls permit approximately 9.75 million square metres (105.0 million square feet) of office space to be built in the Central Area.
- there has developed a long term need to increase the capacity of the road and transit system serving the Central Area and, consequently, amendments to "Section 7: Transportation" of the Official Plan will be required, including the reconsideration of proposed Official Plan Amendment No. 170, which has yet to receive Provincial approval.

1.2.3 Implications For The Deconcentration Strategy

No major transportation improvements will be implemented in the Central Area until 1991 at the earliest, by which time the proposed Front Street Extension may be in place. Consequently, with the exception of incremental improvements to the GO Transit system, the Central Area Plan will have succeeded in affording a 15-year period (1976-91) over which to direct major transportation investments towards promoting the development of the planned sub-centres. During this time:

- approximately one billion dollar's worth of transportation investments will have been spent or committed in servicing the Scarborough and North York sub-centres.
- office development in the Central Area has been below the 1981 and 1986 review limits and will also likely fall below the 1991 limit.
- the sub-centres have increasingly established themselves as attractive alternative locations to the downtown for many types of office activities.
- as the sub-centres have matured, the importance of retaining rigid restrictions on the level of Central Area office development has lessened.
- future growth of the sub-centres will, however, continue to be affected by the timing and priority of major transportation improvements within the Metropolitan area.
- the future challenge is to achieve a balance in the pattern of Metro infrastructure improvements to ensure that continued support is given to the growth of the sub-centres, while not ignoring the long term transportation needs of the Central Area.

- the timing and need for major Central Area transportation improvements remains an important issue to which considerable uncertainty is attached in the long term.

1.2.4 The Original Assumptions Regarding The Land Use/ Transportation Equation

The estimates made in 1975 of the capacity of the then existing and committed transportation system serving the Central Core Area have proved to be of varying accuracy:

- surface transit ridership has not grown to expected levels.
- GO rail ridership has increased beyond expected levels.
- some surplus capacity remains on the subway system south of Bloor Street, largely on the University line.
- a modest increase in auto commuting has been experienced, although the capacity of the roads has remained essentially unchanged.

The subsequent exercise of linking transportation capacity to employment and development levels entailed a number of assumptions that have similarly proved to be of varying accuracy:

- increases in office employment and associated work trips were somewhat off-set by losses in other types of Central Area employment, particularly industry.
- office work trips remain strongly peaked and the staggering of work hours has not occurred to the extent anticipated.
- evidence suggests that walk-to-work trips may be increasing faster than expected in the Central Area.
- general "absenteeism" (vacation, sickness, working out of the office, etc.) may be higher than predicted due to increases in part time office employment and an increasing proportion of management/professionals in the Central Areal work force.
- the floor space per worker (FSW) index has increased beyond the original long term projection of 25.5 square metres to 26.0 square metres by 1986.
- the office vacancy rates have been higher than anticipated, reaching a record level of 12% in 1984.
- certain density transfer agreements have altered the original development assumptions applied in the formulation of the Central Area Plan.

In aggregate, these variations in the original assumptions appear to have balanced out and the original transportation and development capacity estimates have generally held up, even if not entirely for the reasons predicted. In January, 1986 there were 5.7 million square metres (62.0 million square feet) of office space in the Central Core. If the original 6.55 million square metres

(70.5 million square feet) limit on Central Core office development had been rigidly maintained there would not be the long-term pressures there are today for major transportation improvements to service this area.

1.2.5 Future Uncertainty

Looking beyond immediate short term priorities, it is difficult to accurately predict the need for and timing of major Central Area transportation improvements. There is considerable uncertainty attached to a number of key transportation planning variables, including:

- future trends in modal split.
- future trends in Central Area employment growth.
- future trends in the relationship between downtown office development and the growth in peak-hour work trips.
- future changes in the composition of the local Central Area population and resident labour force.
- future changes in non-office activities (entertainment, shopping, etc.) in the Central Area.
- future changes in regional commuting patterns to the Central Area.

The experience of the 1975-85 period illustrates the difficulties of traffic forecasting in the Central Area. Over the early part of this period, between 1975 and 1981, the major indicators moved along together more or less as expected, with a 22% increase in office floor space being accompanied by 18% and 30% increases in peak-hour trips and office employment respectively. In contrast, over the 1981-5 period, office space growth remained strong, increasing by a further 15%, while office employment remained relatively stable (5% growth) and the number of peak-hour trips actually declined slightly (down 3%).

1.2.6 Transportation Planning Initiatives

Recognizing the future long term imbalance between the development potential of the Central Area and the capacity of the transportation system to service such growth, a number of Metro, TTC, Provincial and City studies were undertaken over the 1982-6 period to address this issue. Principal among these reports were the Accelerated Rapid Transit Study (ARTS), the Central Waterfront Transportation Study (CWTS), the GO-ALRT Study, the Railway Lands studies and the Network 2011 study. From this body of analysis, a number of transportation proposals have been identified to improve regional access to the Central Area over the long term. The major proposals include:

ROADS:
- The Front Street Extension
- The Widening of the Gardiner Expressway
- Don Valley Corridor/Leslie Street Extension Options

TRANSIT: - Incremental Expansion of GO Rail
- GO/TTC Fare and Service Integration
- Harbourfront LRT
- Spadina LRT
- Downtown Relief Line Option

- The priority items are considered to be the incremental expansion of the GO train system, including fare and service integration with the TTC, and the widening of the Gardiner Expressway and the extension of Front Street.

Beyond these immediate priorities, it is difficult to predict the need for and timing of other Central Area transportation improvements and a number of the items listed above (such as the Relief Line and Leslie Street Extension) are only long term options and may never prove to be needed or might be replaced by what are found in the future to be more appropriate alternatives.

1.2.7 A General Approach To Future Transportation Planning In The Central Area

A general theme of this reivew of the 1975-86 period has been to point out the uncertainty attached to transportation planning for the Central Area and to indicate the need to develop a flexible planning approach that can adapt to changing circumstances. Consequently, it is suggested that:

- the review and monitoring processes of the Plan be broadened.
- an incremental approach to transportation planning be pursued.
- the greatest attention be given to the most immediate transportation priorities.
- subsequent commitments to more long term proposals be made in stages as required, based upon further reviews at later dates.
- amend "Section 7: Transportation" of the Official Plan to reflect the approach outlined above as a means of addressing the problem of maintaining an adequate balance between the land use and transportation elements of the Plan.

1.2.8 Other Considerations

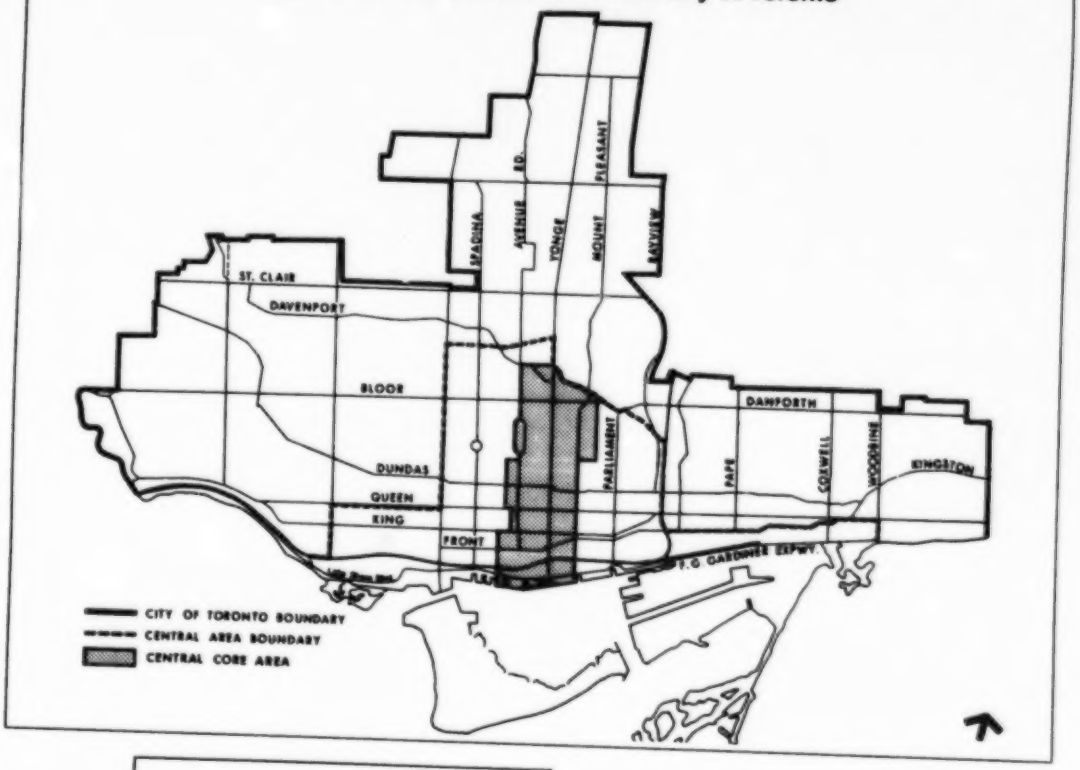
There is a tendency to over-emphasize the need for major regional transportation improvements resulting from the demands of the growing Central Area office sector, while down-playing more local transportation issues. Currently, there are a number of important local transportation improvements under study that offer considerable benefits to traffic and pedestrian movements within the Central Area, including:

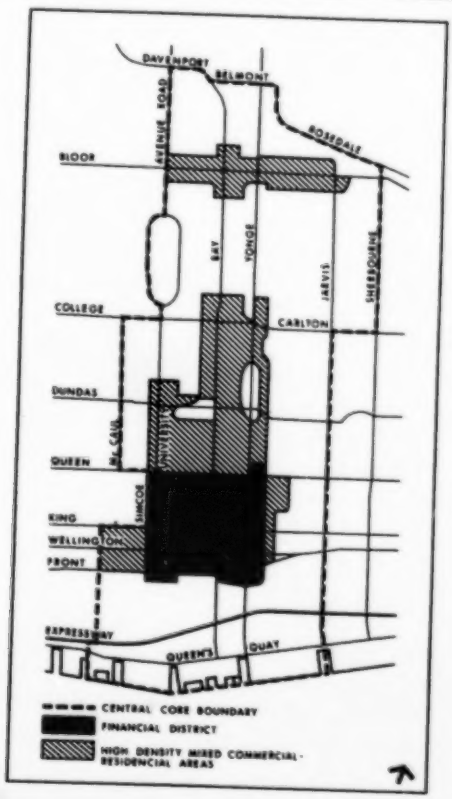
- proposed changes to the Gardiner/Lake Shore ramp system.
- new local street system for the Railway Lands, including a new Spadina Avenue bridge and additional north/south road connections across the rail corridor.

- proposed Dufferin Street jog elimination and extension.
- new local street system associated with Massey-Ferguson lands development proposal.
- improvements to the TTC's Bloor/Yonge subway station.
- improvements to Union Station.

Every effort should be made to integrate the planning of regional and local transportation investments to maximize the benefits these opportunities present to not only improve traffic conditions but to provide enchanced pedestrian connections, to reduce perceived barrier effects and to rationalize the local layout of streets and adjacent land uses.

Map 1
Location of Boundaries for Parts of the City of Toronto





Map 2
Location of Boundaries for Parts of the Central Core Area

2 Context

The Official Plan policies regarding transportation are part of the larger policy objective of promoting a deconcentrated pattern of land use development at the Metropolitan scale. The Central Area Plan basically seeks to limit the amount of office employment growth in the Central Area to the capacity of the existing and committed transportation system to accommodate such growth as a means to control the rate of office development and employment growth in the Downtown and thereby encourage the growth of the planned suburban sub-centres.

In 1975, a consultant study, known as the Parkinson Report, was commissioned to determine the capacity of the existing and committed transportation system serving the Central Core (see Maps 1 and 2 for a description of the boundaries used in this text). It was assumed that, in the absence of any plans for major increases in the capacity of the road system, all additional capacity would be provided by transit. In light of this assumption, particular attention was given to the area south of Bloor Street where the four subway lines serving the Central Area converge into two and where the limitations of transit capacity are most binding and the market demands for office development are most pressing.

The Parkinson Report identified a lower and upper transportation capacity limit, depending on the set of assumptions applied, from which were derived associated high and low employment and development control limits. It was determined that the Central Core could accommodate a range of office development between a lower level of 6.55 million sq. m (70.5 million sq. ft.) and an upper level of 8.18 million sq. m. (88.0 million sq. ft.). The zoning provisions of the Central Area Plan were designed to permit the achievement of the lower development level. It was intended that the remaining 1.63 million sq. m (17.5 million sq. ft.) of office development necessary to achieve the upper development level would be permitted at the discretion of City Council through the proposed Official Plan provisions.

City Council cannot, of course, directly regulate levels of office employment in the Central Area. From a transportation planning point of view, land use controls are an indirect means by which to affect employment and trip growth. In his evidence before the Ontario Municipal Board, Parkinson recommended that the lower estimate of transportation capacity be used for land use planning purposes. The details of the transportation capacity estimates and their translation into associated employment and development control levels are discussed later in this Background Report.

As part of the deconcentration strategy, it was understood that it was important that no commitments be made to new major transportation improvements that would have the effect of significantly improving accessibility to the Central Core Area. A principal task, therefore, of the Central Area Plan, was to strike the appropriate balance between a desirable rate of office growth and the capacity of the existing transportation system to accommodate such growth. In this regard, Section 1A.7 of the Official Plan states in part:

> "It is the policy of Council to promote the deconcentration of office employment within the metropolitan area by:
>
> ...d) ensuring that future office growth within the *Central Core* will be compatible with the capacity and anticipated utilization of the existing transportation system serving the *Central Core* together with improvements to that system which were under construction or committed for construction on September 30, 1975."

In the context of controlling office development, within certain prescribed limits derived from the capacity of the existing and committed transportation system, the following key transportation policies were adopted as part of the Central Area Plan:

> "7.2 (b) Notwithstanding any other provisions of Section 7, it is the policy of Council to discourage further measures which would facilitate the use of automobiles for commuting into the Central Core.
>
> 7.5 Notwithstanding any other provisions of Section 7, it is the policy of Council that emphasis should be placed on the movement of people by means of public transportation. In the short term, however, Council shall support the increased use of public transportation during the peak hours only to the extent that such use does not necessitate the construction of additional major transit facilities, the result of which would be to significantly increase the transportation capacity of the transportation system serving the Central Core."

The application of these policies has permitted major transportation investments, particularly in transit, to be directed towards the suburban areas of Metro to promote the growth of the planned sub-centres. Subsequent planning reports, originating in 1976, further expanded the basic policies put forward in Sections 7.2(b) and 7.5 and lead to City Council's adoption, in 1981, of further amendments to Section 7 "Transportation" of the Official Plan (O.P.A. No. 170).

However, as will be discussed in Section 5.1, a September 1983 status report from the Commissioner of Planning and Development advised that in light of certain trends it would be advisable to defer further processing Official Plan Amendment No. 170 until City Council had dealt with the planning proposals flowing from the "Railway Lands Development Concept" (Sept. 1983) and Metro's "Central Waterfront Transportation Study" (June 1983). The status report noted that continued revision of the land use component of the Central Area Plan had resulted in a long-term imbalance between transportation capacity and development capacity and that "... in the long term, increases in the capacity of both the transit and road systems will be required to accommodate currently permitted development levels in the Central Area".

Since the 1983 status report there have been no further steps taken to gain final Provincial approval of Official Plan Amendment No. 170. In the following discussion, the appropriateness of continuing to pursue the approval of this Official Plan amendment will be assessed and the possible need to amend Sections 7.2(b) and 7.5 of the Plan will also be reviewed.

3 Land Use/Transportation Principles

Ten years after the approval of the Central Area Plan, the main question that remains is whether it is appropriate to continue to rigidly pursue restrictive transportation policies which are designed to limit the amount of commercial development permitted in the Central Area.

Since the approval of the Plan, there has been considerable discussion as to whether its original intent was to impose an absolute ceiling on the amount of office development in the Central Area or to control the rate, rather than the amount, of such growth. In the reports that led up to the Central Area Plan proposals, emphasis was given to the need to control office development in the Central Area for at least a ten-year period in order to give the process of deconcentration a reasonable chance to become established. For example, in the March, 1975 "Principles" report prepared by City planning staff, the argument was presented, on the basis of studies conducted by the Metropolitan Toronto Transportation Plan Review (MTTPR), that if Central Area employment could be limited to 435,000 (over an estimated 1974 base of 350,000) no major transportation improvements would be required. City staff estimated at the time that, if the recent high rates of development were maintained, the 435,000 figure could be reached within ten years, by 1985. Consequently, the "Principles" report concluded:

> "Clearly, if the option for decentralized regional development is to be maintained, it would be desirable to postpone, to the extent possible, the attainment of sufficient office space in the Central Area to accommodate around 435,000 jobs. Ideally, it would mean programming this development to at least 1985" (p. 25).

In the Parkinson study (1975) reference is made to "... ways to increase transit capabilities within the committed period (1975-85)". In the subsequent development and approval of the Central Area Plan, the issue of the time-frame and intent of the transportation constraint policy became blurred. After the period of public discussion of the Central Area Plan proposals, it was the Planning Board, not staff, who introduced the idea of explicit review limits (or "trigger figures") on the amount of office development permitted in the Plan. The addition of the review limits was designed to "... safeguard the implementation of the policy of deconcentration" and explicitly extended the horizon of the Plan to 1991, the last five-year review date specified. The OMB approved the principle of five-year office review limits and the associated monitoring process. However, the Cabinet, in modifying the OMB's decision on the Central Area Plan, raised the 1981, 1986 and 1991 review limits in order to permit a more rapid rate of Downtown office development. It is these modified figures that appear in the Official Plan today.

In its majority decision on the Central Area Plan, the OMB noted that:

> "There was some confusion in Mr. Parkinson's report as to the period covered by the calculations and whether they were based on a ten-year forecast or whether the figures were representative of the situation to the end of the year 2000. However, little, if anything, turned on this particular point."

In fact the Board, in its majority decision, went on to conclude that the more important point was that:

> "The deconcentration policies ... enable the projected office growth to take place within the Metropolitan area without incurring large, additional expenditures for transportation facilities servicing the Central Core."

The Cabinet's concern, in reviewing the appeal of the OMB decision, was that the Central Area Plan policies on office development limits might be too restrictive. The Cabinet's Order-in-Council (1979) expressed concern over the "residual amount of office development" (the 1.63 million sq. m referred to above) that represented the difference between the upper and lower capacity estimates and which was to be permitted for development at Council's discretion. This amount of office development potential was considered by the Cabinet to represent an "inordinate" degree of flexibility and, consequently, it was recommended that the review limits be raised to reflect more accurately the upper development limit. As a part of the reasoning behind this recommendation, the Cabinet's Order-in-Council also includes the following significant statement:

> "Finally, and of major significance, is that by relaxing the constraints in the rate of growth, better utilization of the transit system serving the Central Core at an earlier time will be encouraged."

From the above statement, it would appear that the Cabinet was anxious to see the capacity of the Central Area transportation system used to the full sooner rather than later. It is also interesting to note that Metro's position in approving the Central Area Plan proposals, particularly Sections 7.2(b) and 7.5, was based largely on the understanding that the Plan was being proposed on a ten-year basis. In a June, 1976 report which reviewed the Central Area Plan proposals, the Metropolitan Commissioner of Planning states:

> "It is only necessary here to restate the Metropolitan viewpoint that reliance on the committed transportation system is still essentially a short term (to 1986) concept reflecting current priorities and subject to the ultimate feasibility of deconcentration policies."

From the above discussion, it can be seen that there has always been some confusion over the original intent of the Central Area Plan's policies of relating commercial development to the available capacity of the existing and committed transportation system. The establishment of an office space monitoring process related to five-year review limits, indicates that the Central Area Plan is very much concerned with controlling the rate of development. However, experience has demonstrated the impracticability of imposing absolute limits on office development. From its inception the Plan has been amended to permit higher development levels.

Today a realistic estimate (see Section 5.3 for details) of the level of office development permitted in the Central Area is over 9.75 million sq. m (105 million sq. ft.) which is considerably more than the originally proposed 8.18 million sq. m upper limit suggested for the Official Plan and well beyond the 6.55 million sq. m limit recommended by Parkinson on the basis of available and committed transportation capacity. These figures clearly indicate that there is a long-term imbalance between development and transportation capacities in the Central Area and that, as a consequence, road and transit improvements will be required at some point in the future.

In arriving at this conclusion, it is important to note that no such improvements have been made over the first ten years of the Plan (1976-1986) and that no major future improvement will be in place for at least the next five years. In this context, it can be argued that, with the exception of

incremental improvements to GO-transit, the City's Official Plan policies will have been successful in postponing the need for major Central Area oriented transportation facilities for more than 15 years.

Meanwhile, Metro Council has given support to approximately 900 million dollar's worth of transportation improvements for the major sub-centres over the 1975-91 period. The principal costs included in this figure are those related to:

a) extending the Danforth subway line from Warden to Kennedy stations (1980, $55 m.) and connecting it to the Scarborough City Centre via the Scarborough RT Line (1985, $200 m.);

b) building the Park Home subway station to service the North York City Centre (1987, $25 m.);

c) developing a new Sheppard Avenue subway line from Yonge Street to Victoria Park Avenue (post 1991, est. $550 m.);

d) improved surface transit services to the North York and Scarborough City Centres;

e) improving road access to the Scarborough City Centre, particularly McCowan and Brimley Road (1984-7, $19 m.).

Also, during the 1976-86 period, the rate of office development in the Central Area has been below the trigger figures prescribed by the Cabinet and the 1991 limit will also likely not be breached. These results can be considered a major accomplishment of the Plan in permitting a period of fifteen or more years over which to divert engeries to the promotion of the Metropolitan planning objective of deconcentration.

Another important principle of the Central Area Plan was to limit office development to primarily within the Central Core, and then, within the Core itself, to give priority to the Financial District. At the time the Central Area Plan was prepared, little attention was given to the area south of Front Street. In the area between Front Street and the Gardiner, the 1976 planning proposals acknowledged the emerging residential area of St. Lawrence and recognized the "strategic importance" of the Railway Lands. Since 1976, the area south of Front Street has undergone considerable planning change.

These changes, which largely complete the planning process for the area south of Front, have added considerably to the amount of office space that can be built beyond the original limits of the Central Core and the aggregate control totals for this area. In addition, the 1978 approval of the Central Industrial District Plan and associated Part I amendments added the potential for significant amounts (estimated to be up to 508,000 sq. m) of office space to be built in certain areas adjacent to the Central Core, particularly in the King-Spadina and King-Parliament areas. Consequently, the general principle of limiting office development primarily to the Central Core has been relaxed over time as planning studies in adjacent areas (largely to the south of Queen Street) have been completed. This process has contributed significantly to the long-term imbalance between transportation and development capacities noted above.

A further principle upon which the Central Area Plan rests, asserts that the rate of office space development is related to the total level of development permitted by the Zoning By-law and Official Plan provisions. If the zoned capacity of the Plan is adjusted up or down, the probable rate at which the permitted development potential is taken up or built also moves up or down accordingly, all other things being equal (see Section 5.3 for a fuller discussion). However, in the real world, all other things seldom are held equal, and the actual rate of development is, of course, dependent upon a great many economic considerations including those relating to demand as well as supply conditions. As discussed more fully later (Section 7.1), there is currently considerable uncertainty attached to future projections of Downtown office employment growth and the associated demand for new space.

In the recent OMB Hearings on the Railway Lands proposals, City planning staff presented evidence that the impact of approving the proposed commercial development levels might be to increase the average annual rate of office space absorption (1976-85) in the Central Area by up to 10% (from 150,000 sq. m to 165,000 sq. m a year). Such an increase in the rate of development is essentially the result of a supply-side effect. By increasing the area of land over which office space can be developed or by permitting more office space to be built over the same area, the real cost of land is reduced allowing office space to be produced more cheaply and, consequently, consumed at a higher rate. From a transportation viewpoint, a higher rate of office space development means, all other things being equal, that available transportation capacity is used up more quickly and decision points on the need for additional transportation facilities are advanced to an earlier date.

Finally, one result of the application of these principles of the Central Area Plan has been to establish the belief in many minds that there is a strong, direct, and immutable relationship between the factors of office space development, employment growth and additional peak-hour commuting. These relationships, although based on a number of assumptions, were defined in the 1976 Plan in relatively precise arithmetical terms. As a consequence, perhaps, there may have developed a general tendency to attach to the transportation component of the Plan a numerical fixity and predominance that was never originally intended. To the extent that this is the case, there may also exist a tendency to over-emphasize the mechanism of the Plan at the expense of recognizing or understanding more fully the principles upon which it is based. The adoption of the monitoring and review processes of the Plan reflect, in part, a desire to correct for this situation by adding an element of flexibility and adjustment to the Plan by permitting both the mechanisms and the principles to be reviewed and modified in the light of experience. The following section goes on to discuss the original transportation/land use mechanism of the Plan in some detail, and illustrates the need to review and modify the numerical assumptions upon which this mechanism is based.

4 Applied Principles and the Plan in Practice

The identification and subsequent translation of transportation capacity into zoned capacity for commercial office space development entails a number of steps, each with its own set of assumptions. These steps are discussed below. They begin with Parkinson's original estimates of the peak-hour capacity of the existing and committed transportation system in 1975 and from these figures the original estimates of the amount of office employment and floor space development that could be accommodated by this transportation system are reviewed. Finally, the method by which aggregate floor space control totals were then translated into actual zoning and Official Plan designations is described and reviewed.

4.1 Estimating Available Peak-Hour Transportation Capacity

For design purposes attention is focussed on peak-hour traffic requirements. If the peak-hour demand can be accommodated then, it follows, all other periods of demand can be adequately met. The original Parkinson analysis estimated the peak-hour capacity of existing and committed transit facilities to bring commuters into that part of the Central Area south of Bloor Street. Table 1 below provides a summary of Parkinson's original estimates. These capacity estimates of individual transit modes were, however, subject to interpretation.

Table 1
Central Area Plan
Original Transportation Capacity Estimates
(Parkinson Study 1975)

Mode	Capacity		Utilization	Surplus Capacity	
	Realistic	Practical	(1975)	Realistic	Practical
Subway	66,000	66,000	46,000	20,000	20,000
Streetcar	12,250	14,250	8,250	4,000	6,000
TTC Bus	2,800	2,800	1,800	1,000	1,00
Regional Bus	3,050	3,050	1,550	1,500	1,500
GO Train	16,800	19,800	7,100	9,700	12,700
VIA	1,500	1,500	1,000	500	500
Express Bus	2,000	5,000	0	2,000	5,000
Total	104,400	112,400	65,700	38,700	46,700

4.1.1 Peak-Hour Capacity Estimates

In the following section, Parkinson's original capacity estimates for each mode are reviewed in the light of recent experience.

Subway

In 1975, Parkinson estimated the combined, maximum peak-hour capacity of the Yonge-University subway lines to be 66,000 passengers per hour per direction (or 33,000 pphpd on each line). At the time, the TTC used a figure of 40,000 pphpd as the maximum for a subway line but more recent TTC/Metro studies have shown a more realistic figure to be around 34,000, much closer to Parkinson's original estimate. In fact, the TTC maintains that the capacity constraint on the Yonge-University line is the station dwell (stop) time at the Bloor Station. The present $12 m. of improvements scheduled for the Bloor/Yonge Station will not significantly relieve this constraint and are designed primarily to improve passenger storage, comfort and safety, not line capacity.

Actual peak-hour ridership levels on the Yonge-University subway lines are summarized in Table 2 and illustrated in Figure 1.

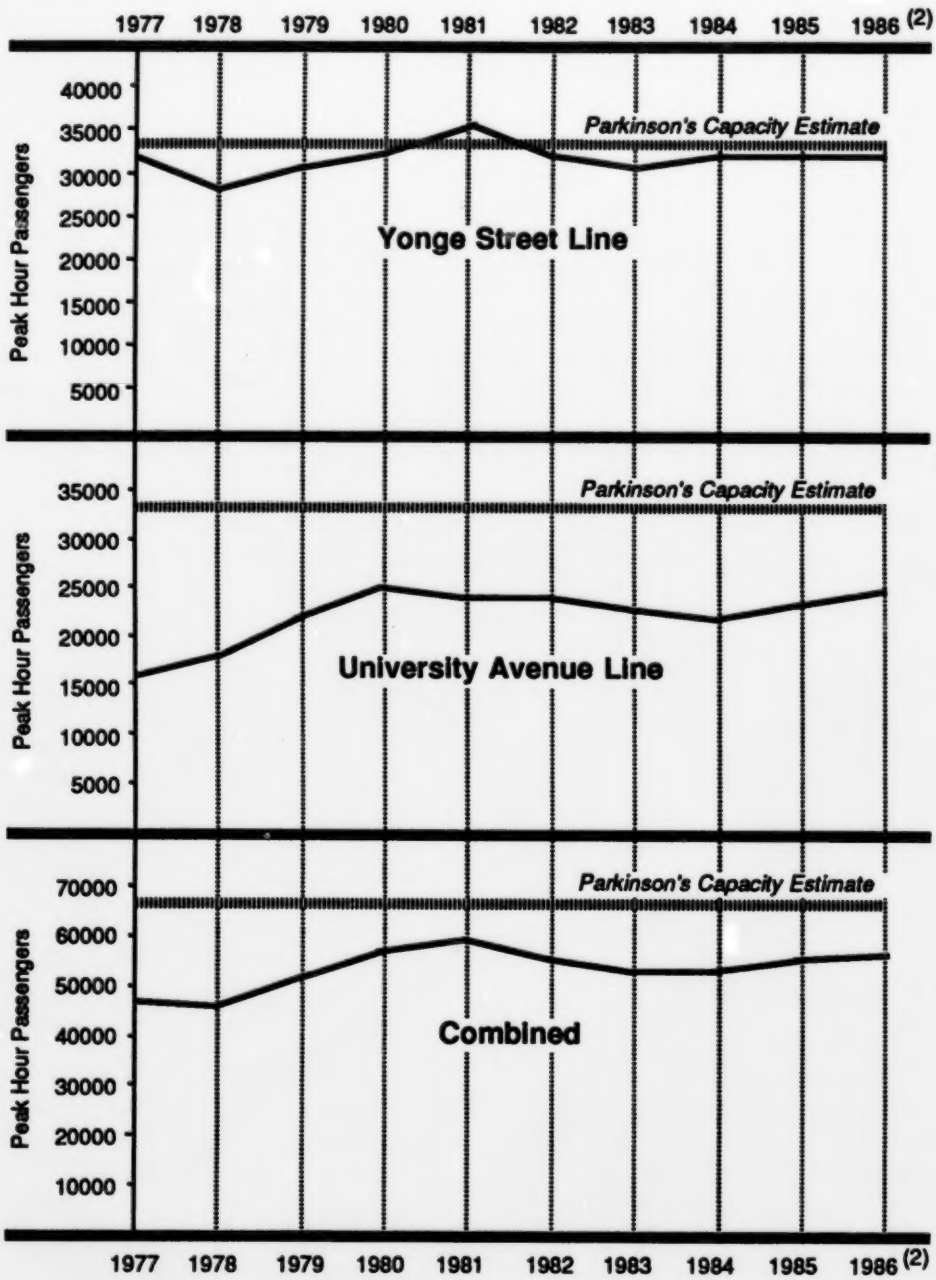
Table 2
A.M. Peak Hour Subway Volumes
Yonge and University Subway Lines
1977-1986

Year	University Line (S.B. south of Bloor)	Yonge Line (S.B. south of Bloor)	Total (S.B. south of Bloor)
1977	15,500	31,300	46,800
1978	17,700	27,800	45,500
1979	21,700	30,200	51,900
1980	24,900	32,100	57,000
1981	23,900	35,200	59,100
1982	23,700	31,700	55,400
1983	22,700	30,300	53,000
1984	21,400	31,400	52,800
1985	23,200	31,700	54,900
1986 *	24,500	31,800	56,300
Parkinson Capacity Estimate	**33,000**	**33,000**	**66,000**
Surplus Capacity	**8,500**	**1,200**	**9,700**

Source: TTC. Volumes based on the average of the three highest monthly counts for each year

** Based on the first ten months of 1986 only*

Figure 1
AM Peak Hour Subway Volumes
Yonge and University Subway Lines
1977-1986



(1) *Source: T.T.C. Volumes on the average of the three maximums counts for each year*
(2) *Based on the first 10 months of 1986 only*

Streetcar

Parkinson estimated that the existing streetcar system could be incrementally expanded by the addition of new vehicles to bring an additional 4,000 to 6,000 passengers an hour into the Central Area. It was recognized that in the long-term the residential growth potential of the areas served by the streetcars would be the limiting factor in determining streetcar ridership potential. Information from the Metro Cordon Count Program over the 1975-1985 period, summarized in Table 3 and illustrated in Figures 2, 3, 4 and 5, show a steady decline in peak-hour streetcar ridership into the Central Area (from 11,300 passengers an hour in 1975 to 7,400 passengers an hour in 1985). This decline in ridership has also been reflected in a reduction in streetcar services into the Central Area during this period. Consequently, with respect to additional streetcar capacity, the original (1976) assumptions have not proven true over the first ten years of the Plan. Increases in the number of housing units in the City might lead to a reversal of this downward trend in streetcar ridership.

Table 3
Inbound Person Trips to the Central Area
(A.M. Peak Hour)

Year	Private Auto	Taxi	Subway	TTC Bus	Other Bus	Streetcar	Subtotal TTC Surface	GO Train	Total Person Trips
1975	43,184	981	59,107	1,095	962	11,338	12,433	6,223	122,890
1976	42,602	1,076	63,572	1,419	1,452	10,535	11,954	7,633	128,289
1977	45,168	1,268	66,253	1,475	1,671	9,663	11,138	8,678	134,176
1978	44,075	1,135	54,615	1,002	1,579	10,894	11,896	9,709	123,009
1979	49,043	1,196	60,671	1,163	1,782	10,116	11,279	9,735	133,706
1980	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1981	43,100	1,140	74,975	1,193	1,264	10,700	11,893	12,460	144,832
1982	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1983	45,379	1,232	71,543	1,134	1,481	9,949	11,083	12,875	143,593
1984	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1985	45,737	1,252	67,292	1,456	1,072	7,385	8,841	15,930	140,124
75-85 change	2,553	271	8,185	361	110	(3,953)	(3,592)	9,707	17,234
75-85 % change	5.9	27.6	13.8	33.0	11.4	(34.9)	(28.9)	156.0	14.0

Source: Metropolitan Toronto Planning Department Cordon Count Program

Figure 2
Inbound Person Trips to the Central Area
(AM Peak Hour)

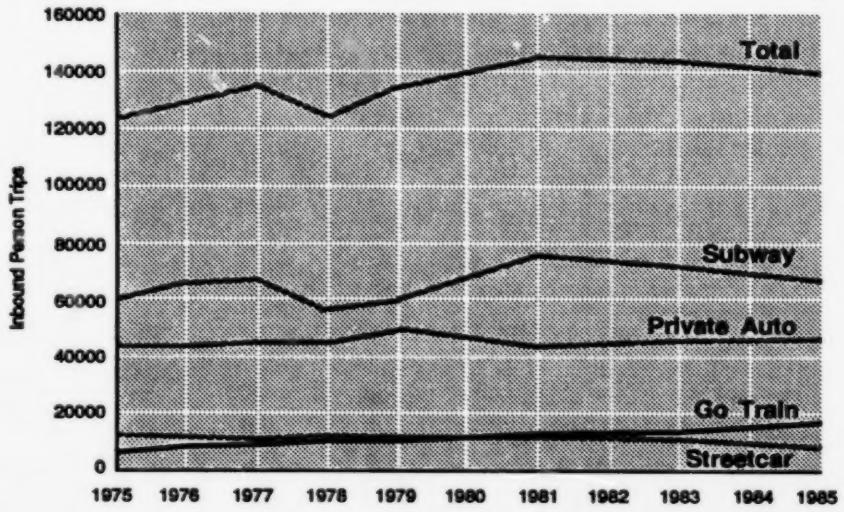
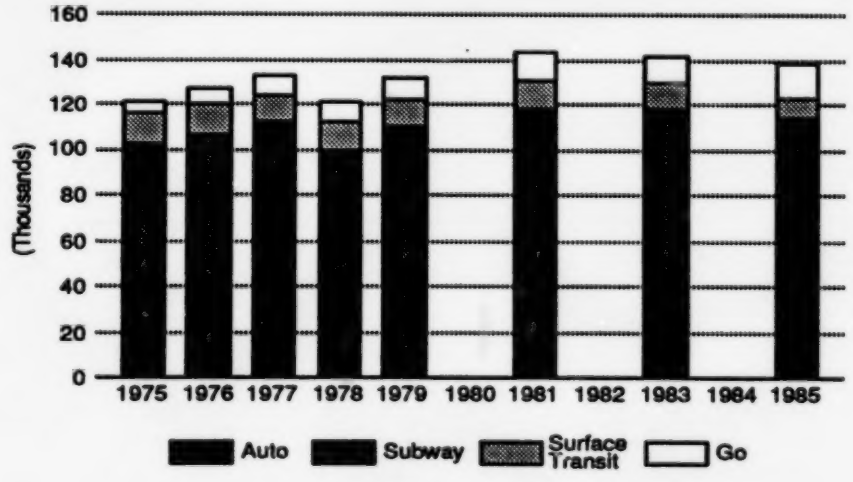
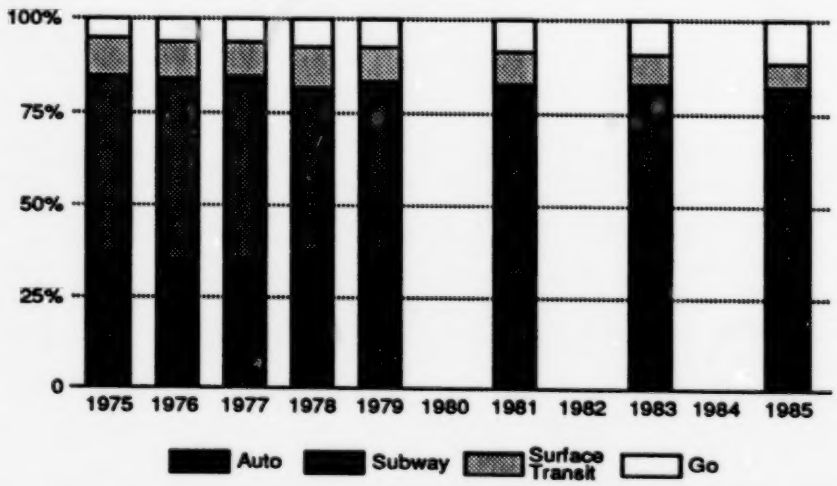


Figure 3
Inbound Trips to the Central Area
Cumulative Totals
(AM Peak Hour)



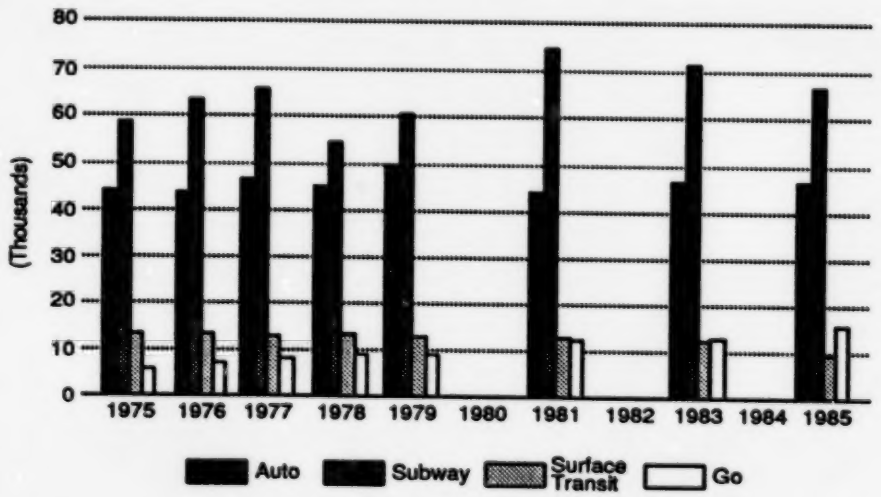
Source: Dept. of Public Works

Figure 4
Inbound Person Trips to the Central Area
Share by Mode
(AM Peak Hour)



Source: Dept. of Public Works

Figure 5
Inbound Person Trips to the Central Area
Totals by Mode
(AM Peak Hour)



Source: Dept. of Public Works

Other Local Surface Transit

In looking at other TTC surface transit routes, Parkinson felt that only the Bay Street route was of any real significance, with the potential through incremental expansion to carry up to 1,000 additional peak-hour passengers. The Spadina, Avenue Road, Church and Wellesley routes were not considered sources of significant additional future transit capacity into the Central Area. Cordon count data shows that peak-hour ridership on surface transit (bus and trolley coach) routes into the Central Area has remained basically stable over the 1975-1985 period with some year to year fluctuations around the average figure.

Parkinson estimated that regional buses might also play a larger role in bringing people into work in the Central Area in the future. Consequently, an additional capacity of 1,500 passengers an hour was assigned to this mode. However, since 1976 GO-transit, the major component of inter-regional commuter bus service, has adopted a policy of terminating many of its peak-period services at subway stations in the suburban municipalities. Consequently, less GO-buses operate directly into the Central Area and cordon count data for the 1975-85 period show little change in the use of this mode of travel to access the Downtown during the peak-period.

Commuter Rail

In looking at regional commuter rail services, Parkinson estimated that VIA and GO Rail could provide a combined increase in additional peak-hour capacity of between approximately 10,000 to 13,000 passengers into Union Station. Today, the limited VIA rail commuter services have been taken over by GO-transit and the future expansion plans for GO-rail services are considerably greater than those "committed" at the time of the Parkinson Report. Recent Provincial/Metro studies indicate that incremental capacity increases to the existing GO Rail lines serving Union Station could increase peak-hour capacity to Union Station to 33,000 passengers (see Table 4). By undertaking further relatively modest enhancements to service, this figure could be increased further to 39,000 passengers. This recent estimate of GO train capacity is approximately twice as high as the original Parkinson estimate. Cordon count data show that over the 1975-85 period, GO Rail has seen a steady and strong increase in peak-hour ridership into the Central Area. The 1985 figure of 16,000 peak-hour passengers into Union Station represents a more than doubling of 1975 ridership levels.

Table 4
Current Estimated Capacity of the GO Rail System

Service	Theoretical Peak Hour Capacity			
	Existing Service* (# Trains)		Enhanced Service** (# Trains)	
Lakeshore West	10,800	(5)	12,960	(6)
Georgetown	6,480	(3)	6,480	(3)
Milton	6,480	(3)	6,480	(3)
West Total	**23,760**	**(11)**	**25,920**	**(12)**
Richmond Hill	2,592	(2)	4,320	(2)
Stouffville	Not Estimated		Not Estimated	
Bradford	Not Estimated		Not Estimated	
North Total	**2,592**	**(2)**	**4,320**	**(2)**
Lakeshore East	6,480	(3)	8,640	(4)
Total	**32,832**	**(16)**	**38,880**	**(18)**

Source: Network 2011 A Rapid Transit Plan for Metropolitan Toronto, May, 1985 Appendix E - Table 1

* *Existing Theoretical Capacity based on assuming operation of 10 car bi-level trains (2,160 passengers) on all lines except Richmond Hill which is limited to 6-car trains (1,296) due to platform length limitations. Capacity of Bradford and Stouffville lines not estimated because of limited potential of those lines.*

** *Enhanced service based on adding an extra peak hour train on each of the Lakeshore East and West lines (as was concluded technically feasible in Lakeshore GO Transit Capacity Study, Phase 1, February, 1984) and operation of 10-car trains on Richmond Hill line.*

Regional Bus

The Parkinson Report also included an estimate of additional peak-hour capacity resulting from the introduction of TTC express bus services (between 2,000 to 5,000 additional passengers an hour) but to date no such services to the Central Area have been introduced. Over the past few years, the Sherbourne Express bus proposal has been discussed as a possible short-term means by which to relieve congestion on the subway at the Bloor/Yonge interchange but to this point conditions have not warranted the introduction of this relief measure.

Auto

Although the Parkinson Report considered the capacity of the road system serving the Central Area as fixed and, therefore,only looked at additional transit capacity, the fact is that over the last ten years peak-hour automobile passengers into the Central Area have increased by some 6%. Cordon data indicates that this increase has not been steadily upwards and includes fluctuations from year to year, with the highest ridership level in the 1975-1985 period being recorded in 1979 for the Central Area cordon. However, because of a slight decline in the auto occupancy rate, the comparable increase in auto vehicles over the 1975-85 period has been 12%, with 1979 again being the peak-year. This increase in peak-hour auto vehicle trips has occurred in the absence of any major improvements to the Central Area road system and presumably at the cost of increased congestion

and slower travel speeds. The question of overall trends in the modal split of Downtown commuters is discussed later.

Summary

Cordon data for the inbound, morning, peak-hour movement of passenger trips into the Central Area are displayed in Table 3. These numbers are, in turn, shown graphically on Figures 2 to 5. From these figures it can be seen that over the 1975-85 period, inbound a.m. peak-hour trips into the Central Area peaked in 1981 and then have marginally declined since that point to 1985. Within the context of this marginal decline in total person trips from 1981, there has been a slight shift in the overall modal split from transit to auto in the Central Area. This shift has mainly arisen from a declining level of subway ridership from the peak figure of 1981, while auto passenger trips have continued to steadily climb back towards their 1979 peak. Throughout the ten-year period, GO-transit has shown consistent peak-hour growth, particularly over the 1979-85 period. On the other hand, surface transit ridership has shown a slow but steady decrease in peak-hour volumes over the 1975-85 period.

From the above discussion, it can be seen that the transportation capacity assumptions of the 1975 Parkinson Report have not proven completely accurate for the 1975-85 period. Generally speaking, the anticipated increases in surface transit use and capacity (streetcars, buses, trolley coaches, regional and express buses) have not developed as expected. In contrast, however, GO Rail ridership increases have been of greater significance than originally forecast and the potential for incremental expansions to the capacity of this system is greater than originally believed possible. Surplus capacity still remains on the subway system south of Bloor Street, although 88% of the available capacity is on the University line, with the Yonge line operating close to capacity today in the peak-hour. Also, the 1975-85 period has seen a modest increase in auto commuting into the Central Area despite the fact there have been no major improvements to the road system.

4.1.2 Capacity Utilization

In addition to these explicit assumptions regarding future estimates of peak-hour transit capacity, there were implicit assumptions about how this capacity would be utilized.

Trip Purpose Assumptions

It was implicitly assumed that all the additional transit capacity identified in the Parkinson Report would be available for office work trips. This, in turn, reflected the assumption that there would be no significant change in the level of peak-hour, non-office trips, such as other work trips (industry, institutional, retail) or non-work trips (school, shop). From the available data, it is difficult to judge how realistic this assumption has proven to be.

Based on relatively coarse estimates of 1970 employment levels, Metro Planning Department data indicate that, over the 1970-85 period, total Central Area employment increased by approximately 53,000 jobs (increasing from 318,000 to 371,000). Over this period an 80,000 increase in office jobs was partly off-set by a 35,000 decrease in manufacturing jobs. Based on more reliable data for the 1981-85 period, it now appears that the decline in Central Area manufacturing jobs has levelled out, while gains in full-time office employment over this period have been small. Obviously, when looking at the impacts on the Central Area transportation system, changes in all occupational

categories, not just office, have to be looked at. (Changes in the occupational structure of the Central Area over the 1971-81 period, based on census data, are discussed more fully in Background Paper No. 7).

Trip Distribution Assumptions

It was implicitly assumed that all the additional transit capacity would eventually be fully utilized. This means the supply (capacity) of transportation services will perfectly equate with the pattern of demand (use) for such services. From the above discussion, it can be seen that this assumption has not always proven correct. Perhaps, the best example to illustrate the point is that of surface transit, where the ability to incrementally expand such services has proven of little value in the absence of a growth in the demand of surface transit ridership into the Central Area. However, this situation could change in the future if the Central Area labour force grows as a result of new residential growth in parts of the Central Area served by surface transit. This subject will be discussed more fully at a later point in this report (see Section 7.4).

Trip Orientation Assumptions

It was implicitly assumed that all the additional transit capacity would be used for *inbound* office work trips. This means that the amount of peak-hour through traffic travelling right across the Central Area was expected to remain unchanged. It is difficult to estimate accurately from cordon data whether or not the proportion of through trips in the Central Area is changing. Merely subtracting inbound cordon volumes from outbound volumes does not provide an accurate answer to this question. There is a theoretical argument that, as the Central Area grows and the peak-hour becomes more congested, there will be an increasing tendency for marginal through trips to be diverted to other routes around the Central Area, thus making more capacity available for purely inbound trips destined to Central Area workplaces.

4.2 Estimating Office Employment Levels on the Basis of Available Transportation Capacity

4.2.1 The Quality of Service Factor

Transportation capacity is not normally expressed as a single figure, except in the extreme case of the upper limit at which point a facility or service becomes over-loaded and ceases to operate. Usually, the notion of capacity is related to some measure regarding the level of service. For example, as discussed above, the capacity of a TTC subway line is now commonly accepted as around 34,000 pphpd. However, this is not the absolute capacity limit and, indeed, in 1981 a record count on the Yonge line immediately south of Bloor Street measured 38,000 passengers over the peak-hour. At these high volumes, though, the level of service or crowding on the subway is considered unacceptable and the lower 34,000 figure is taken as more appropriate for planning or design purposes. Similarly, for the entire system as a whole, Parkinson made the assumption that current levels of crowding could be accepted as appropriate for future planning purposes or a 5% reduction in the additional "capacity" estimates could be applied to allow for a slightly more generous level of service or comfort. This 5% reduction was applied to the lower capacity limit developed by Parkinson. In the case of the Central Area road system, however, the actual situation has presumably gone the other way since the volume of traffic has increased over an unchanged system, resulting in marginal increases in congestion.

The general point is that there can be considerable variation in estimates of transportation capacity depending upon what is considered to be an acceptable level of service. Often, in practice, transportation facilities operate at beyond the accepted level of crowding and are said to be "beyond capacity" though still managing to operate. The problem is further compounded by the fact that often congestion occurs at only one, localized point or "bottleneck" for a short period of time.

4.2.2 The Peak-Hour Factor

The Parkinson Report assumed a general peak-hour factor of 57% for all work trips. This figure means that 57% of all peak-period, Central Area work trips are expected to occur in a single peak-hour. Parkinson estimated that, over time, this figure might fall to 53% as the peak-hour becomes increasingly congested and a greater portion of trips occur around the "shoulder" of the peak-hour. The 53% assumption was used in deriving the upper level of transit capacity estimate. However, the recent surveys of Central Area office buildings by City planning staff in 1984 and 1986 reveal that the peak-hour factor for purely office work trips appears to be somewhat higher than the general Parkinson estimates, being in the area of 66%. This would suggest that there may remain a considerable potential for the staggering of peak-hour office work trips. However, the impact of Parkinson having used an apparently low estimate of the peak-hour factor would be to over-estimate the total amount of office employment that could be accommodated by a given increase in peak-hour transportation capacity.

4.2.3 The Absenteeism Factor

It is generally acknowledged that, on any given weekday, not every Central Area office employee travels to the Downtown workplace. An accepted rule-of-thumb, based upon some coarse assumptions regarding such factors as the average levels of vacation and sickness days experienced by office workers, is that on average 10% of the workforce is "absent" for one reason or another on a typical work-day. This 10% factor was used in the Parkinson Report. Today there are arguments to suggest that the true number may be higher than 10%. The principal reasons for believing this to be the case relate to the fact that much of the recent increase in Central Area office employment has been in part-time jobs and that the occupational structure of Downtown office employment is changing towards a greater proportion of managerial/professional employees. Obviously, part-time workers have less impact on the peak-hour transportation system than their full-time counterparts, since they do not travel into work every day of the work week and are more likely to work shift hours outside the peak. Managerial/professional office employees are more likely to spend time away from the office and to travel to and from work at less regular hours. The effect of increasing the assumed "absenteeism" factor is to increase the estimate of office employment growth that the transportation system can accommodate.

4.2.4 The Walk-to-Work Factor

For the Central Area, the traditional assumption has been that approximately 5% of all peak-hour office work trips are made by foot or bicycle and, therefore, do not place any direct demands on the capacity of the transportation system. A 1981 survey conducted by City planning staff of the journey to work patterns of Central Area residents concluded that between 6-8%, in summer, and 5-7%, in winter, of all office work trips in the Core Area are by foot. In comparing these results to the conclusions of a 1968 Metro transportation survey of apartment residents, there appears to be some evidence of the percentage of Central Area residents walking to work having increased over

the 1968-81 period. City planning staff are currently conducting a survey to update the 1981 results to see if the postulated trend towards an increasing proportion of walk and cycle to work trips is continuing. Over the 1976-85 period some 17,000 new housing units were built in the Central Area, with a surprisingly high proportion being built within the Central Core itself. To the extent that the walk-to-work trip is increasing, both in absolute and proportional terms, the need for major regional transportation improvements is diminished. Consequently, it appears that some success can be attached to the Central Area Plan policy of reducing transportation pressures by providing homes closer to the workplace. Recent housing projections suggest that this successful trend is likely to continue into the future.

The results of applying the above factors to Parkinson's transportation capacity estimates are summarized in Table 5 below.

Table 5
Central Area Plan
Original Estimates of Additional Employment Potential

	Lower Estimate	Upper Estimate
Surplus Peak Hour Capacity [1]	38,700	46,700
Quality of Service Factor	95%	100%
Adjusted for Quality of Service Factor	36,800	46,700
Peak Hour Factor	53%	50%
Adjusted for Peak Hour Factor	79,100	109,500
Walk-to-Work Trips	3,200 [2]	4,800 [3]
Adjusted for Walk-to-Work Factor	82,300	114,300
Absenteeism Factor	5%	15%
Adjusted for Absenteeism Factor	86,400	131,400
Total for the Bloor Street Area [4]	**7,500**	**11,000**
Total for Central Core Area	**93,900**	**142,400**

1 See Table 1
2 Assumed 25,000 new housing units in City
3 Assumed 40,000 new housing units in City
4 Calculations based on different (i.e., not transportation capacity) planning criteria

4.3 Estimating Permitted Development Levels on the Basis of Office Employment Growth

From the Parkinson estimates of available transportation capacity, City planning staff were able, using the method outlined above, to estimate the growth in office employment that could be reasonably accommodated by the existing and committed transportation system serving the Central Area as defined in 1975. However, as mentioned before, the City cannot directly control employment growth and, therefore, the indirect means of controlling the development of office floor space had to be employed. This step required that estimates of the future amount of floor space

required by the permitted level of office employment growth be developed. Two key variables are involved in the development of these floor space estimates:

4.3.1 The Floor Space Per Worker (FSW) Index

The evidence suggests that there has been a noticeable rise (14%) in the FSW index over the 1975-85 period. In the Parkinson analysis an FSW index of 24.15 sq. m (260 sq. ft. per employee) was used in determining in the lower development limit, increasing to 25.5 sq. m (275 sq. ft.) in the estimate of the upper development limit. In fact, by 1985 the FSW Index has already climbed to 26.0 sq. m (280 sq. ft.) and the indications are that, with current trends, in the occupational re-structuring of the Central Area office labour force and the continued impacts of technological change, this index could climb even higher. The obvious implication of a rising FSW Index is that increasingly more office space can be built in the Central Area with diminishing impacts on employment and trip growth. It is important to note that the FSW Index is an average figure that applies to all existing, as well as future, office workers. This point can be illustrated by observing the implications of the 1975-85 increase in the FSW Index from 22.9 to 26.0 sq. m. In 1975 it was estimated that there were approximately 165,000 office employees in the Central Core: with a 3.1 sq. m increase in the FSW Index (1975-85) an additional 0.5 million sq. m (5.5 m. sq. ft.) of office space is required to meet the demands of the 1975 base level of employment alone, without any consideration of the need to accommodate the additional employment growth that has occurred since 1975. The implications of this result are discussed more fully later in this report (see Section 7.2).

4.3.2 The Vacancy Rate Factor

The 1976 analysis assumed that a 5% vacancy rate represented, for planning purposes, an acceptable long-run market equilibrium, though the path to this equilibrium figure might well involve short-term vacancy rates above and below this figure depending upon particular market conditions. Vacant space is understood to mean office space that is built and available on the market but not leased. An increase in the vacancy rate will generally have the effect of off-setting the employment and trip growth impacts of new office development, whereas a decrease in the vacancy rate will have the reverse effect. In 1980, Central Area office vacancy rates averaged 2%, their lowest for the 1975-85 period, then climbed to a high of 12% in 1984 and now stand at around 8%.

There are indications that, due to the processes of technological change affecting the office sector, the equilibrium vacancy rate of office space might be increasing to be closer to the 10% level rather than the 5% level originally assumed. Technological changes may be increasing the demand for new "smart" buildings which in part replace, rather than add to, the stock of older existing office space which may be abandoned or converted into other uses. This might also cause the vacancy rate to rise. The effect of a higher equilibrium vacancy rate would be to diminish the impact of increasing the supply of office space on employment and trip growth.

It should be noted that there is a second type of vacancy rate, sometimes referred to as the "frictional" vacancy rate, which relates to office space that is leased but not occupied. Such unoccupied space, which is off the market, can result from tenants moving into and out of office premises or through space being refurbished or renovated. However, changes in the level of the frictional vacancy rate should be reflected in changes to the FSW Index which is based on occupied or leased space and, therefore, does not require consideration as a separate factor beyond the parameters discussed above.

The result of applying the 1975 assumptions regarding the FSW and vacancy rate factors to the employment potential estimates (of Table 5) are illustrated in Table 6 below.

Table 6
Central Area Plan
Original Estimates of Office Floor Space Potential [1]

	Zoning By-law	Official Plan
Office Employment Potential [2]	259,000	307,000
Future FSW (m2)	24.15	25.5
Future Vacancy Rate	5%	5%
Office Floor Space Potential		
m2	6.55 million	8.18 million
(sq. ft.)	(70.5 million)	(88.0 million)
Existing (1975) Office Floor Space		
m2	4.09 million	4.09 million
(sq. ft.)	(44.0 million)	(44.0 million)
New Development Potential		
m2	2.46 million	4.09 million
(sq. ft.)	(26.5 million)	(44.0 million)

1 Estimate applies to Central Core Area
2 Employment Potential calculated by adding lower and upper additional employment estimates (from Table 5) to existing office employment for the Central Core (approximately 165 000 in 1975) to arrive at the Zoning By-law and Official Plan Office Floor Space potentials respectively

4.4 Allocating Aggregate Floor Space Limits Through Zoning

Having derived the range of office space development that can be accommodated by the available capacity of the transportation system (through the analysis outlined above), there remained the final step of converting this floor space figure into appropriate zoning designations. Based upon the lower transportation capacity estimate, there were some 2.46 million sq. m (26.5 m. sq. ft.) of office development rights to distribute over that part of the Central Core Area between Bloor and Front Streets. Of this total amount, some 1.1 million sq. m (12.0 m. sq. ft.) was already under construction or committed, leaving 1.35 million sq. m (14.5 m. sq. ft.) to be added by way of zoned capacity. At this stage, the problem became one of determining the appropriate zoning designations, in terms of permitted commercial development densities, to enable the development of the allocated 1.35 million sq. m of office space to be realistically achievable.

To address the problem of developing the appropriate zoning designations, an approach that became known as the "Hard/Soft Analysis" was adopted. The first step in this analysis was to divide properties into two classes: *a priori* "hard" sites upon which redevelopment was unlikely to occur and "soft" sites upon which development might occur depending on the maximum commercial development to be permitted. Hard sites comprised the following classes of properties:

1. properties on which a building had been constructed within the previous five-year period;

2. properties on lands zoned for residential or institutional purposes;

3. properties containing publicly owned buildings of historical significance (e.g. Osgoode Hall and St. James Cathedral); and

4. properties exceeding the existing maximum development density of 12 times coverage.

The hard sites were then eliminated from the analysis and the remaining soft sites on each block were amalgamated into a residual block and the existing density of the residual soft block was calculated. Attention then focussed on distributing the 1.35 million sq. m of permitted office development over the residual soft blocks.

However, the redevelopment potential of the soft blocks depends upon the zoning designation given them which, in turn, depends, in part, on the 1.35 million sq. m of development rights available. At the outset, then, it was necessary to decide upon a general relationship between the proposed zoned capacity of a soft block and its existing development density in determining the likelihood of redevelopment to the zoned maximum occurring. During the course of the OMB Hearing on the Central Area Plan, the development industry argued that the zoned capacity of the Plan should be at least three times the 1.35 million sq. m of permitted office development if this target is to be achieved. However, City planning staff successfully argued that a factor of 1.4 (as opposed to a minimum of 3.0) was more appropriate in the context of the Plan proposals.

By taking the reciprocal of the 1.4 factor, the so-called "70% cut-off factor" was established for individual sites. This factor meant that, for any soft block where the ratio of existing development density to zoned density was less than 70%, the block would be expected to redevelop, otherwise it would remain at the existing developed density. For example, if there were two soft blocks with existing development densities of 5 times and 6 times coverages respectively in an area with a proposed zoning of 8 times, then the former block would be redeveloped (since 5/8 is less than 0.7) and the latter would be determined *a posteriori* hard and remain undeveloped. The net consequence in this example of the proposed 8 times zoning would be to see an additional 3 times coverage of office development allocated to the 5 times existing coverage block and this amount of additional development would then be subtracted from the 1.35 million sq. m pool of available development rights. However, as described above, the proposed zoning (in this example 8 times) cannot be determined independently at the outset and an iterative method, using the 70% cut-off factor, had to be developed to simultaneously solve for the zoning while ensuring the target development figure (1.35 million sq. m) is exactly met. Such a method was applied to determining the commercial zoning densities in the Central Core permitted by the Plan.

Under the original proposals, the Official Plan designations made provision for a further 1.63 million square metres (17.5 million square feet) of office space development to be permitted at Council's discretion. This total amount was to be considered for division in roughly three equal parts among the Railway Lands, the HDMCR Areas and estimated requirements of the proposed historical bonus policy. As it turned out, the final OMB decision made most of this 1.63 million square metres of office development as-of-right as part of the zoning provisions of the Central Area Plan.

From the above discussion, it is evident that the zoned capacity of the Central Core has *always* exceeded the lower estimate of the capacity of the transportation system because of the assumption of the 70% factor and subsequent amendments to the original Plan proposals. The cut-off factor is implicitly related to a time horizon when it is expected that, on average, the redevelopment of buildings whose existing coverage is 70% of the permitted maximum will be the norm. If the Plan were to have remained in place beyond this time then, ultimately, every ounce of development rights might eventually have been used up as older buildings were replaced by only slightly larger ones.

It is interesting to note how the intent behind the 70% cut-off factor is respected today as one of the criteria in the City's density transfer policy. The criteria states that it is not permissible to transfer density from a site where the existing development is greater than 70% of the maximum permitted level.

Finally, it should be noted that, like all the other assumptions discussed above, those relating to the Hard/Soft Analysis did not always fully apply in practice. For example, the Lord Simcoe Hotel, which had an existing density exceeding 12 times coverage, has been demolished and replaced by a smaller office development.

4.5 Conclusions

The preceding sections have listed and reviewed the numerous steps taken in developing and defining the original relationships between transportation capacity and permitted development levels as presented in the 1976 Central Area Plan. These steps involve numerous assumptions and, as revealed by the monitoring process, not all have proven correct and certain modifications appear appropriate in the light of actual operating experience.

Yet, in aggregate, the original analysis based on the Parkinson Report, if not always for the right reason, appears to have generally held up. In January 1986, there were 5.7 million sq. m (62.0 m. sq. ft.) of office space in the Central Core, with a further 0.25 million sq. m under construction. Based on experience to date, it would seem that if Parkinson's advice to base office development limits on the lower estimate of transportation capacity at 6.55 m. square metres (70.5 m. square feet) had been strictly followed, there would not be the long-term pressures there are to-day for major transportation improvements into the Central Area.

However, as discussed earlier, experience has shown that no matter what the original intention of the Plan may have been, the imposition of an absolute limit on the total amount of office development in the Core and an all-time ban on major transportation improvements have not proven to be practicable measures. Currently approved commercial development levels will ultimately require both road and transit improvements if the future growth of the Central Area is to be adequately serviced. However, as will be discussed later, the timing of major Core-oriented transportation improvements will remain important in relation to the achievement of the policy of promoting a deconcentrated pattern of Metropolitan growth.

5 Transportation Planning Initiatives 1976-1986

5.1 Transportation Initiatives: The 1976-1982 Period

The Central Area Plan policies for transportation essentially expressed the goal that the future transportation network in the Metropolitan area should be primarily transit oriented. Accordingly, the Plan reflected the positions that no new road improvements into the Central Area and particularly expressways, should be approved. It also articulated the objective that in the short term, major transit improvements to the Central Area should be discouraged and investments in transit during that period should be directed to the subcentres. The Central Area Plan, including the Section 7 statements, was given final approval in 1979. Subsequent planning reports, originating in 1976, further expanded the basic policies put forward in Section 7 and led to the adoption in 1981 of Official Plan Amendment No. 170.

However, a number of events intervened, including the approval of Metroplan, and by 1983 Amendment No. 170 still had not been processed through the Minister. In a September, 1983 status report, the Commissioner of Planning and Development advised that, in light of certain trends, it would be advisable to defer further processing of Official Plan Amendment No. 170 until City Council had dealt with the planning proposals flowing from the "Railway Lands Development Concept " (Sept. 1983) and Metro's "Central Waterfront Transportation Study" (June 1983). The status report noted that continued revision of the land use component of the Central Area Plan had resulted in a long term imbalance between transportation capacity and development capacity and that "... in the long term, increases in the capacity of both the transit and road systems will be required to accommodate currently permitted development levels in the Central Area".

Since the 1983 status report, there have been no further steps taken to gain final Provincial approval of Official Plan Amendment No. 170.

Changing circumstances and trends also gave rise to transportation planning initiatives at the Metropolitan level. After a period of ridership decline between 1975-8, the TTC experienced a dramatic 13% increase in system-wide ridership between 1979-81. It was in 1981 that peak-point ridership on the Yonge subway line just south of Bloor Street reached the maximum recorded to date (38,800 southbound passengers per hour). This reversal in ridership trends led TTC and Metro staff to revise their planning policies and in 1981 Metro Council approved the "Accelerated Rapid Transit Study" (ARTS). The emphasis of the ARTS study was to identify the possible need for new rapid transit lines in Metro and this study became the forerunner of the present-day "Network 2011" study.

The Metro/TTC "ARTS" study was undertaken less than a year after the approval of the Metropolitan Toronto Official Plan (Metroplan) in October, 1981. This was Metro's first approved Official Plan and, among other issues, contained policies on Metro transportation matters. These policies did not include any provision for the expansion of the rapid transit network, other than the Scarborough line which had already been approved. Neither did the policies contain any proposals for significant road expansions into the Central Area.

In 1980, the City's Harbourfront Plan was given conditional approval. It was agreed, at Metro's request, that approximately only half of the full 0.11 million sq. m (1.2 m. sq. ft.) of office space proposed for Harbourfront could be built until adequate local transit services were approved for implementation.

In 1981, City planning staff produced the first Quinquennial Review. At this time, experience of the effects of the new Central Area Plan policies was relatively limited. However, the Review noted that much of the 1976-81 Central Area trip growth had been from areas beyond the Metro boundary and that, as a consequence, GO transit could be expected to play an increasingly important role in accommodating expected future increases in commuter traffic. It was also acknowledged that crowding on the Yonge subway south of Bloor Street had become a serious problem and required attention. The Review observed too that the future development of the Railway Lands and Waterfront could lead to the need for further transportation improvements. However, it was argued that transportation improvements to the Central Area should be of an incremental nature (such as the introduction of express bus services, expanded GO-rail services and, in the longer term, the Spadina LRT) and the next major investment should be directed towards the suburbs in support of the overall policy of deconcentration.

5.2 Transportation Initiatives: The 1982-1986 Period

The results of the Metro/TTC ARTS study were released in May, 1982, and a year later Metro Council authorized the study of three new rapid transit lines, namely the Sheppard, Downtown Relief and Eglinton Avenue lines. In October, 1982, the Province announced the GO-ALRT study program to look at the future of fixed rail inter-regional transit and in December, 1982, the TTC produced its first Long Range Plan which gave immediate priority to the Downtown Relief Line. Also, following on from the Harbourfront Part II Plan, Metro/TTC staff in 1982 initiated work on the "Central Waterfront Transportation Study" (CWTS) and in late 1982 City planning staff produced a first report on possible changes to the Gardiner Expressway/Lake Shore Boulevard ramp system in the Central Waterfront area. During 1982, City planning staff also became heavily involved in developing proposals for a Part II Plan for the Railway Lands.

In June 1983, Metro/TTC staff published the CWTS report. This report analyzed the long-term transportation requirements to serve the future growth of the Financial District, Railway Lands and Harbourfront area. It was estimated that this total area could accommodate up to a 95,000 increase in employment, with 60% of this increase occurring south of Front Street. Metro/TTC staff concluded that the following transportation proposals should be given priority approval or consideration:

a) Front Street Extension (Bathurst to Strachan Avenue);

b) Widening of the Gardiner Expressway (by one lane in each direction between Strachan and the Humber River);

c) Implementation of the Harbourfront LRT; and

d) Possible development of a Waterfront ICTS line (if subsequent studies confirmed the need).

Other desirable elements were identified as:

a) Re-build and widen Spadina bridge across the rail corridor and re-design Spadina north of Front Street with the possibility of introducing LRT service on the street;

b) Dufferin Street extension and jog elimination;

c) Widen Bay, York and Bathurst Streets south of Front Street and possibly improve Jarvis Street;

d) Widen Bayview Avenue Extension;

e) Pursue the Simcoe Street extension;

f) Widen Don Valley Parkway (with Leslie Street extension or eastward extension of the Gardiner Expressway as possible alternatives);

g) Highway 400 and Allen Road extensions "desirable" in long-term, but not recommended at this stage; and

h) Relief Line.

However, the total cost of this extensive list of long and short-term transportation facilities was extremely high, exceeding $700 million and Metro deferred any decisions on the CWTS proposals for over a year pending the receipt of further studies.

City planning staff responded to the CWTS proposals both directly and indirectly through a series of three inter-related reports released in September/October 1983:

a) The Railway Lands Development Concept (Sept. 1983);

b) Status Report on Amendments to Section 7 "Transportation" of the City of Toronto's Official Plan (Sept. 1983); and

c) Response to the Metro/TTC "Central Waterfront Transportation Study" (Oct. 1983, joint report with the Commissioner of Public Works).

The Section 7 Status Report has already been discussed and is the report which pointed out the emerging long-term imbalance between transportation capacity and development potential in the Central Area. Recognizing this imbalance, City planning staff had been developing a comprehensive, computer-based transportation/land use model to re-evaluate the long-term transportation requirements of the Central Area. This model formed a common basis of analysis from which the conclusions of the "Railway Lands Concept" and "CWTS Response" reports were drawn.

The combined results of these three reports was the recognition that in the long-run both road and transit improvements will be required if permitted and proposed levels of Central Area development are to be satisfactorily accommodated and that these changes will require amendments to Section 7 of the City's Official Plan. However, as these reports pointed out, the need for improved transportation services cannot be solely attached to any one particular development proposal, such as the Railway Lands but, instead, have to be evaluated within the context of the Central Area as a whole. It was primarily on this basis that it was argued at the time that consideration of Official Plan policy changes regarding transportation should be deferred until after the 1986 Quinquennial Review, when a more comprehensive evaluation of Central Area planning policies could be undertaken.

As a result of Council's actions at the end of 1983, in response to the recommendations of the "CWTS Response" and "Railway Lands Concept" reports, the City gave support to the concepts of:

a) The Front Street Extension;

b) The widening of the Gardiner Expressway;

c) The Spadina LRT;

d) Dufferin Street jog elimination and extension;

e) Ramp changes in the central section of Gardiner/Lake Shore Corridor;

f) Rebuilding of widened Spadina Avenue bridge; and

g) Support for the incremental expansion of GO-transit rail services and surface transit improvements.

Support for certain of these concepts, such as the Dufferin Street proposals, was conditional upon the development of acceptable designs. However, at the end of 1983 a number of other Central Area transportation proposals were left largely unresolved:

a) The proposed Relief Line and Waterfront ICTS were still under study as part of what was to become the broader "Network 2011" exercise.

b) The Harbourfront LRT proposal became separated out as an item of special study. This facility has been approved by Metro Council and an amendment to the Metropolitan Official Plan to accommodate the line is currently being pursued. The City has also endorsed the LRT proposal but has requested that consideration be given to certain design changes. Pending final Provincial approval, the line is expected to be under construction in 1987.

c) In responding to the CWTS report and in looking at future regional transportation requirements as part of the analysis undertaken for the Railway Lands Development Concept, City planning staff identified the long-term need for road improvements in the north-east, along the Don Valley Corridor, and recommended that the Leslie Street Extension be considered as one possible option. Subsequently, in May 1984, City Council withdrew any support for the study of the Leslie Street Extension and later, in 1986, commissioned a separate consultant study of alternatives to the Extension. This study is now underway and running in parallel with the Metro consultant study of the Leslie Street Extension which was commissioned earlier in June, 1985.

During the course of these debates in the latter part of 1983, City Council also re-affirmed its opposition to any new expressway additions being built into the Central Area and expressed an interest in studying measures to mitigate the current barrier effect of the elevated sections of the Gardiner Expressway which runs through the Central Waterfront area. Later, in October 1985, City Council approved the establishment of a Task Force on the Gardiner/Lake Shore Corridor and studies of the barrier effects are currently underway.

From the basis of the studies and decisions made in 1983, transportation planning in the City has since principally evolved around two main issues: the Railway Lands (including the Dome Stadium) and the "Network 2011" proposals for future rapid transit lines. Each of these are briefly reviewed below, but before proceeding to this discussion it is appropriate to first outline the land use planning changes that took place over the 1976-86 period.

5.3 Land Use Planning Changes 1976-1986

As described earlier in this report, the lower transportation capacity estimate of the 1975 Parkinson Report was taken as the basis for determining the as-of-right office development level of 6.55 m. square metres (or 70.5 m. square feet) for the Central Core. As explained above, the zoned capacity, if actually fully used, would exceed the 6.55 m. square metres limit but it was recognized that it is necessary to somewhat over-zone in order to make a given development limit or target realistically achieveable over an acceptable time frame. On this basis of understanding, the 6.55 m. square metres can be said to have represented a "realistic" estimate of the as-of-right development potential of the Central Area as originaly contained in the 1976 Centrel Area Plan proposals.

However, since 1976 this original level of as-of-right development potential has been added to by changes made to the Central Area Plan by the OMB at the time of its approval in 1978 and later by other subsequent events. In general, there have been three principal means by which such additions have been made:

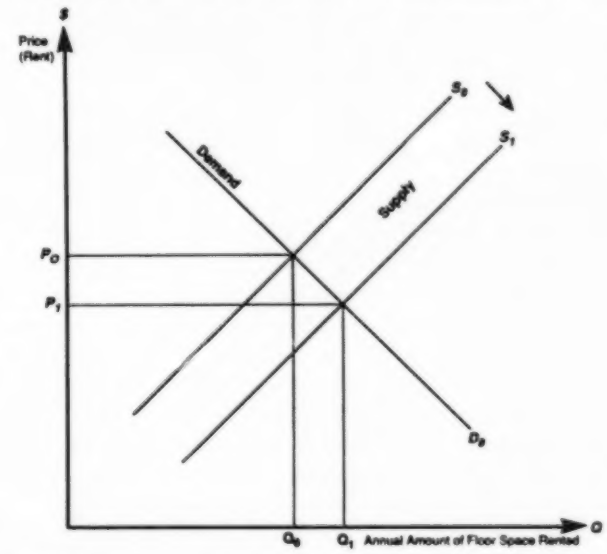
1. Increases in permitted office development densities;

2. Extension of the areas in which office development is permitted;

3. Permitting the transfer of office development rights from one area to another.

As noted earlier in this report, the general effect of increasing the zoned capacity of the Plan, all other things being equal, will be to increase the average annual rate of office space absorption. This general effect is produced by a downward shift in the supply curve for office space caused by a decrease in land costs that results from increasing permitted office development densities or by extending office development zoning into new parts of the Central Area. In either case (up-zoning or extending zoning), the cost of land as a factor of production is reduced, and lower production costs put downward pressure on rents which, in turn, induce an increase in floor space consumption. This process is illustrated schematically in Figure 6, where a lowering of the supply curve for office space (from S0 to S1) can be seen to result in a new higher equilibrium level (Q1) of average annual floor space absorption and a reduction in rents from P0 to P1.

Figure 6
Supply Side Effect of Increased Development Potential



Taking the 6.55 m. square metres figure as the base level of office development rights established in 1975, subsequent additions have increased this figure as follows:

Table 7
Increases in Permitted Office Development Levels
1978-1986

	Additions	Amounts millions sq. m	millions sq. ft.
1.	1978 OMB Changes		
	- High Density Mixed Commercial Areas upzoned	0.53	5.7
	- East end of Railway Lands	0.54	5.8
	- Site Specific Amendments	0.23	2.5
2.	Central Industrial District - Increased office development potential	0.50	5.4
3.	Harbourfront	0.11	1.2
4.	Site Specific Amendments (1980-86)	0.43	4.6
	e.g., Eaton's Phase II, Bank of Nova Scotia		
5.	Railway Lands Part II Plan	0.60	6.5
6.	Central Waterfront/Central Bayfront- World Trade Centre Proposal	0.15	1.6
7.	Massey-Ferguson Development	0.13	1.4
	Sub Total:	**3.22**	**34.7**
8.	1975 Base Level of Permitted Development	6.55	70.5
	Grand Total:	**9.77**	**105.2**

It should be noted that the original Central Area Plan proposals ignored the area south of Front Street although this area has always been zoned to permit office development. Consequently, the figures quoted above for parts of the Railway lands, Harbourfront and Central Waterfront areas are not strictly additional to the previously permitted levels of office development, but rather are additional to what was contemplated at the time of the Central Area Plan's formulation and the transportation capacity analysis upon which it was based.

As of January, 1986, there were 6.32 m. square metres (68.0 m. square feet) of office space in the whole Central Area with a further 0.28 m. square metres (3.0 m. square feet) under construction. Over the 1976-86 period, the average annual rate of office construction in the Central Area has been around 0.15 m. square metres (1.6 m. square feet). Accepting the above estimate of 9.77 m. square metres (105.0 m. square feet) as the current realistic limit on office development potential, there would appear to be sufficient development capacity permitted by present Central Area planning controls to accommodate approximately 25 years of growth based upon past development rates.

However, as discussed later, office development rates are not a simple product of zoned capacity but also relate to a host of other economic factors on the demand side. Consequently, the simple linear extrapolation applied above to identify the 25-year figure should be viewed as a means of identifying a theoretical limit rather than providing a practical estimate of the future rate of demand for downtown office development and associated employment growth. A sub-committee of the City's Economic Development Committee is currently conducting a series of studies relating to the question of future downtown employment growth prospects. The results of these studies should provide insight into the future economy of the Central Area and its continuing role as a major office employment centre.

5.4 The Railway Lands

In January, 1985, the Provincial Government announced the decision to locate the new Dome Stadium in the Railway Lands just west of the CN Tower. Shortly afterwards the Metro Chairman's Office produced a report in support of the Province's decision and indicating that no additional transportation facilities would be needed to specifically serve the Dome. Following on from the Concept Report (Sept. 1983), City planning staff, in March, 1985, released for discussion Part II Plan proposals and an Implementation Strategy for the Railway Lands which reflected various modifications as a result of the Dome decision.

With respect to transportation matters, the Part II Plan proposals dealt mainly with local road and transit issues. Approval of the Plan was not made conditional upon any regional transportation improvements since, as discussed earlier, it was felt that such facilities would be required in any event to serve the growth of the Central Area in general. The Plan proposed that the Railway Lands would be developed incrementally on a precinct by precinct basis and, through this controlled development process, the balance between land use and transportation would be maintained.

The Part II proposals stated that the Dome Stadium would be designed as a multi-purpose urban facility that will be "... fundamentally transit- and pedestrian-oriented" and, consequently, a deliberate policy of limiting on-site parking for the Dome was adopted. The local roads plan provided for at-grade intersections of streets in the Railway Lands and introduced new north/south streets (principally the Portland and Simcoe Street extensions) across the rail corridor in an effort to better link the City to its Waterfront. These initiatives were also complemented by the work being

undertaken for the City's Ramp Study which, at that stage, had just begun its second phase of analysis. The Part II proposals required the re-building of the Spadina bridge and supported the Harbourfront LRT proposal and the introduction of a Spadina streetcar system.

After a period of review and modification, the Part II proposals for the Railway Lands were finally adopted by City Council in October, 1985. Following this approval, City planning staff began processing the first precinct development application for "Precinct A", which includes the Dome Stadium site. Final reports on the Precinct A proposal were prepared in January, 1986, and were again subject to a period of review and modification before finally being adopted by City Council in March, 1986. The Railway Lands Part II and Precinct A plans then went before the OMB for Provincial approval in June 1986 and the Hearing extended throughout the summer. However, before these Plans came before the OMB a number of significant modifications had been made:

a) All of the Railway Lands, even those beyond the Central Core, are to be included in future Quinquennial Reviews;

b) City and Metro staffs agreed to develop an annual joint monitoring process of land use/transportation relationships in the Central Area, including the Railway Lands; and

c) The new Spadina bridge is to be built before the Statium opens and adequate provision for bus and bicycle parking on the Stadium site is to be ensured.

During the course of the OMB Hearing, Metro and the TTC argued that the commercial component of the Precinct A development should be made conditional upon a firm commitment to implement the Spadina LRT proposal. However, the OMB decision rejected this argument, and Precinct A has largely been approved without any commitment to the LRT or regional transportation improvements being required as a condition of development.

5.5 The "Network 2011" Report

In May, 1985, Metro/TTC staffs published the "Network 2011" report which, in response to Metro Council's earlier request for studies of the Sheppard, Relief and Eglinton lines, outlined a 30-year rapid transit plan for the Metropolitan Toronto area. This report also included the relevant findings of the GO-ALRT study program which, after its effective conclusion in late 1984, saw a large part of the program's staff and resources transferred to the studies of the Sheppard/Finch and Eglinton transit corridors. The Network 2011 report was distributed widely for comment before Metro/TTC staff produced a Final Report in June, 1986.

It should also be noted that in May, 1985, Metro Council authorized environmental and feasibility studies of the Front Street Extension proposal and a feasibility study of the proposed Gardiner Expressway widening. These consultant studies are now currently underway. Also, as mentioned earlier, in June 1985 Metro Council authorized a consultant study of the proposed Leslie Street Extension and Lower Bayview Avenue widening and this too is now underway.

The City's Commissioners of Planning and Development and Public Works responded to the Network 2011 proposals in a joint report written in April, 1986. The basic conclusion of the City's response was to accept the Relief Line as a second priority option as recommended in the Network 2011 Report. The acceptance of second priority was based upon a number of considerations, the

most important of which related to a continued commitment to the incremental improvement of GO Rail services to Union Station, including fare and service integration with the TTC. It was also recommended that support be given to the interim transit improvements identified in Network 2011 (such as the Spadina/Harbourfront LRT lines, the Sherbourne Express bus and the Yonge/Bloor station improvements) and other options (such as the Bay Street line and surface transit improvements in the Don Valley Corridor) should also be kept under consideration. Other important considerations in supporting the deferral of the decision on the Relief Line related to uncertainties regarding the future rate of Central Area office employment growth and the continued need to support the policy of deconcentration by making suburban transit investments the first priority.

The Network 2011 report recommended that the alignment of the Relief Line extend west of Union Station to Spadina Avenue, preferably following a route under Front Street or, alternatively, Wellington Street. In either case, it meant there was no longer the need to maintain a separate Waterfront ICTS line and this option was removed from further consideration. Also, and significantly, the Network 2011 report recognized the difficulties of predicting long-term travel demands and recommended that a five-year review process for evaluating Metro's rapid transit plans should be established.

The Metro/TTC Final Report on Network 2011 was released in June, 1986, and re-confirmed the Relief Line proposal as a second priority option, along with the Eglinton line, to be reviewed in 1992 and subsequent five-year periods. The June, 1986 report also acknowledged the increasing importance of GO Rail transit in serving the future growth of the Central Area and the desirability of introducing fare and service integration between GO and the TTC. The report also noted that current uncertainties in predicting office employment growth in the Downtown area and the possibility of interim relief measures, including expanded GO services, could defer the need for the Downtown Relief Line beyond the initial estimates proposed in the original May, 1985 report. The Final Report, consequently, restated the earlier conclusion that the first phase of the Sheppard Avenue subway line, from the Yonge subway eastwards to Victoria Park Avenue, should be given first priority for construction between 1989-94 at a cost of approximately $526 million (1986).

Metro Council gave consideration to the recommendations of the Final Report on Network 2011 on June 24, 1986 and, in large part, adopted the Metro/TTC staff recommendations. Basically, Metro Council approved as first priority the construction of the first phase of the Sheppard Avenue subway and directed that the Metropolitan Official Plan be amended to include both the Sheppard and Eglinton lines as future major rapid transit proposals. Further, the TTC, in co-operation with Metro and City staff, were requested "... to monitor employment growth and transit usage in the Central Area and recommend implementation of appropriate surface transit improvements and subway operational and station improvements to relieve crowding on the Yonge and University subway lines, as required".

The discussion of the Network 2011 proposals also brought to light increasing concerns regarding the need to improve inter-regional transit services and provide better cross-boundary access. As a result, Metro Council included in its actions a recommendation to establish an Advisory Transportation Planning Committee to discuss transportation planning in the Greater Toronto Area (GTA) and to give priority attention to service and fare integration between Peel Region and Metropolitan Toronto. Also, in July 1986, the Provincial Government invited representatives of Metro Toronto, Durham, York and Peel Regions and most of the area municipalities to participate in the Regional Transportation Planning Forum. The Forum was created to establish a consultation

process to address transportation planning issues in the GTA and assist the Province in developing a short-term transportation investment program which recognizes aspects of affordability and the potentially conflicting demands of the various municipalities within the Region. Between July and December 1986, the Forum met regularly every two weeks and, at the end of the process, Provincial Staff produced a brief report summarizing the Forum's achievements and suggesting that it continue as an on-going mechanism for consultation and information exchange in the GTA.

To some extent, these initiatives of Metro and the Province to stimulate the debate of major transportation proposals at a regional level, represent attempts to fill the present lack of an effective regional planning framework. However, in the absence of an agreed upon or approved regional land use plan for the G.T.A., transportation infrastructure decisions will continue to be largely made on a demand-reactive basis, reflecting individual local needs rather than pursuing a coherent regional planning strategy.

6 Current Transportation Proposals

As a result of planning initiatives taken since 1982, there are now a number of major Central Area transportation proposals that have been approved, with varying degrees of commitment, for further detailed study. In considering only the major items, the list of such proposals can briefly be described as follows:

6.1 Current Road Proposals

6.1.1 The Front Street Extension ($55 m.)

Metro has retained the consultant firm of M. M. Dillon to conduct feasibility and environmental studies of this facility and, currently, six possible alignments for the extension are being evaluated. If approved, this facility will require an amendment to the Metropolitan Toronto Official Plan. The City of Toronto has endorsed the concept of the Front Street Extension, subject to design approval. It is expected that Metro staff will be presenting their recommended alignment to the public in the Spring of 1987 as part of a Public Information Program with a final report going to Metro Council later in the year.

6.1.2 The Widening of the Gardiner Expressway Between Approximately Strachan Avenue and The Humber River ($100 m.)

Metro has retained the consultant firm of DelCan to conduct a feasibility study of the proposed widening and no specific details of the various options by which to achieve this are yet available. If the widening can be achieved within the existing right-of-way of the Gardiner Expressway, as initially thought, then there may be no need to amend the Metropolitan Official Plan. Again, the City of Toronto has endorsed this concept subject to design approval. (It should be noted that the cost estimate provided here is considerably greater than the $35 m. figure given in the "Overview" report and represents the most recent rough estimates based on the ongoing work of the current Metro consultant study.)

6.1.3 Don Valley Corridor Improvements/Leslie Street Extension

As a result of the Metro/TTC "Don Valley Corridor Transportation Study" (1983), Metro decided, among other things, to retain the consultant firm of McCormick-Rankin to conduct feasibility and environmental studies of the Leslie Street Extension and Lower Bayview Avenue Widening. The possible need to widen Bayview Avenue south of River Street is now being looked at as a separate issue, independent of the Leslie Street Extension. Two basic alignments for the Leslie Street Extension are being studied and the consultant has just produced a preliminary environmental assessment report detailing the impacts of the alternatives. If approved, the Leslie Street Extension will require an amendment to the Metropolitan Official Plan. Metro is also studying proposals to widen Don Mills Road and Victoria Park Avenue to improve access in the upper Don Valley Corridor.

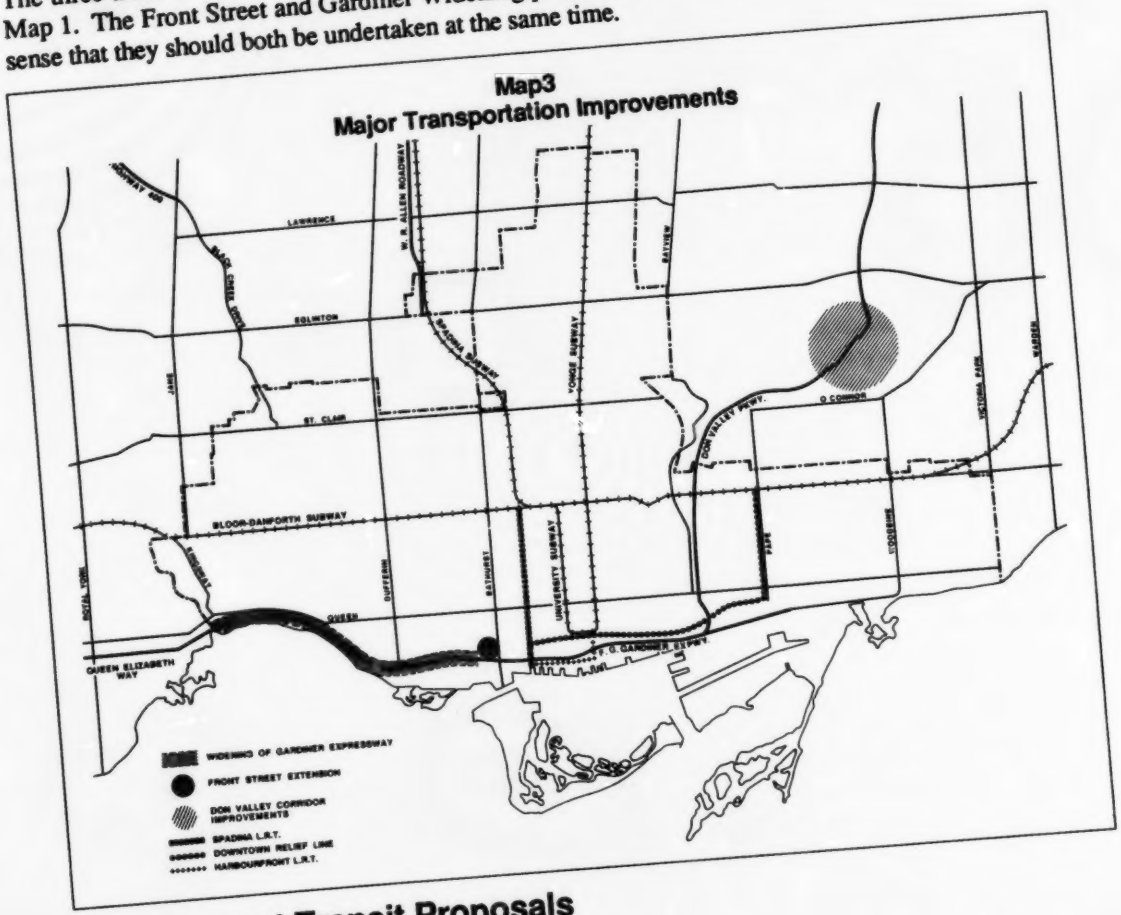
In June, 1984, the City of Toronto Council decided to oppose the Leslie Street Extension proposal and recommended that Metro not pursue the study of this option. In May, 1985, the City of Toronto retained the consultant firm of Project Planning to monitor the progress of the Metro study,

evaluate its conclusions and develop alternative solutions to that presented by the Leslie Street Extension option. The City has recommended that transit alternatives be studied and that the possibilities of increasing the capacity of the Don Valley Parkway continue to be looked at as potential options.

The estimated cost of the Leslie Street Extension is $62.4 m., exclusive of property costs.

The three areas of major road improvements discussed above are illustrated, in general terms, on Map 1. The Front Street and Gardiner Widening proposals are usually considered as a pair, in the sense that they should both be undertaken at the same time.

Map3
Major Transportation Improvements



6.2 Current Transit Proposals

6.2.1 Harbourfront LRT Line ($50 m.)

This facility has recently been approved by both Metro and City Councils and Metro is currently in the process of amending its Official Plan to accommodate the line. The City of Toronto has requested that considerations be given to extending the underground section of the line further south, all the way under Bay Street and just around the corner to surface on Queens Quay, in order to avoid the difficult Bay Street/Queens Quay intersection.

6.2.2 Spadina LRT Line ($40 m.)

Metro/TTC staffs are currently revising their designs for this line in response to public reaction to an earlier proposal brought forward for discussion in Sept./Oct., 1986. Recently, a consultative committee was established to examine the LRT proposal and a final report from Metro staff is not now expected until September, 1987. Consequently,the Spadina LRT remains stalled at the design stage and has yet to receive any final approvals from either Metro or the City.

6.2.3 Downtown Relief Line ($550 m.)

This proposed TTC rapid transit line has been endorsed by Metro and City Councils as a possible future transit option as identified in the "Network 2011" planning strategy. As such, the need for and priority of this line will be reviewed in 1992, along with other possible options, and such reviews will be conducted at subsequent five-year intervals as appropriate. However, unlike the Sheppard and Eglinton Avenue rapid transit line proposals, the Metropolitan Official Plan is not currently being amended to indicate on it the Relief Line as a future rapid transit proposal.

6.2.4 Incremental Expansion of GO Rail Services

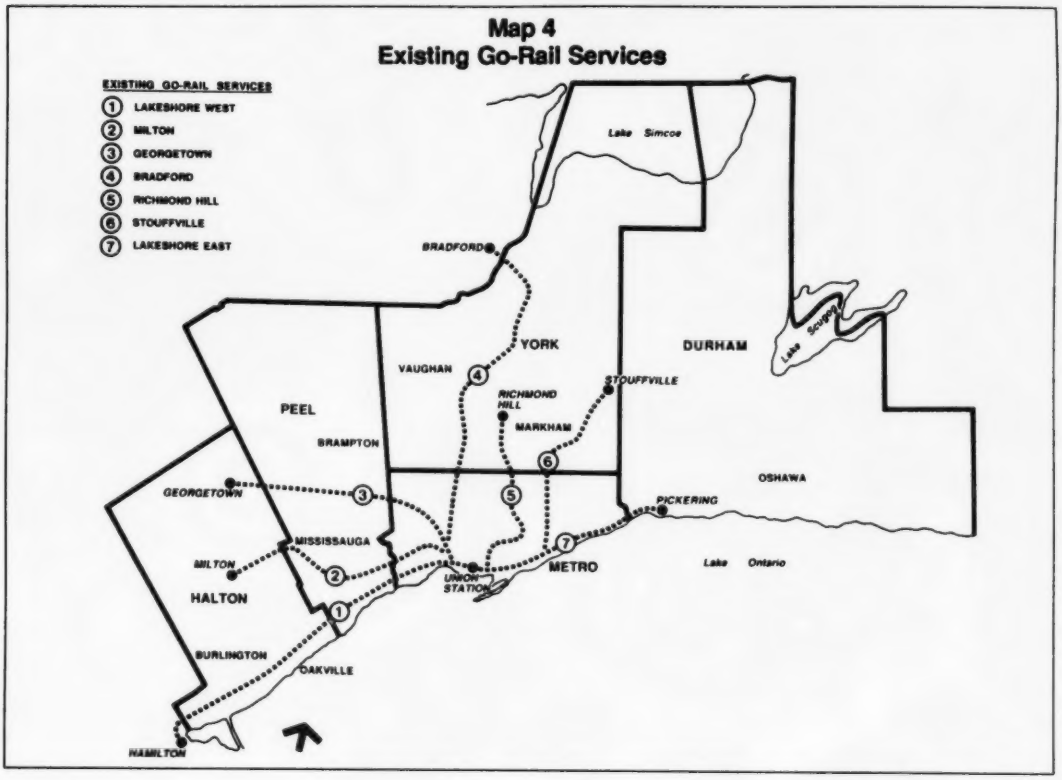
Following the conclusion of the GO-ALRT Program, the Province has reconfirmed its commitment, over the medium-term, to the upgrading of the present commuter GO Rail system based on diesel trains and the shared use of existing CN/CP rail corridors. Since its inception, GO Rail Service to Union Station has been incrementally expanded by the Province as increases in demand have warranted. Currently, there are plans to increase service on the Lake Shore West and Milton lines. The Richmond Hill line is also being considered as a candidate route for future service expansion at a cost of up to $175 million. In addition, full GO train service will be extended on the Lakeshore East line from Pickering to Whitby by 1988 and on the Lakeshore West line from Oakville to Burlington by 1990. As a Provincial agency, GO Transit's plans do not require the approval of Metro or the City.

6.2.5 GO/TTC Fare and Service Integration

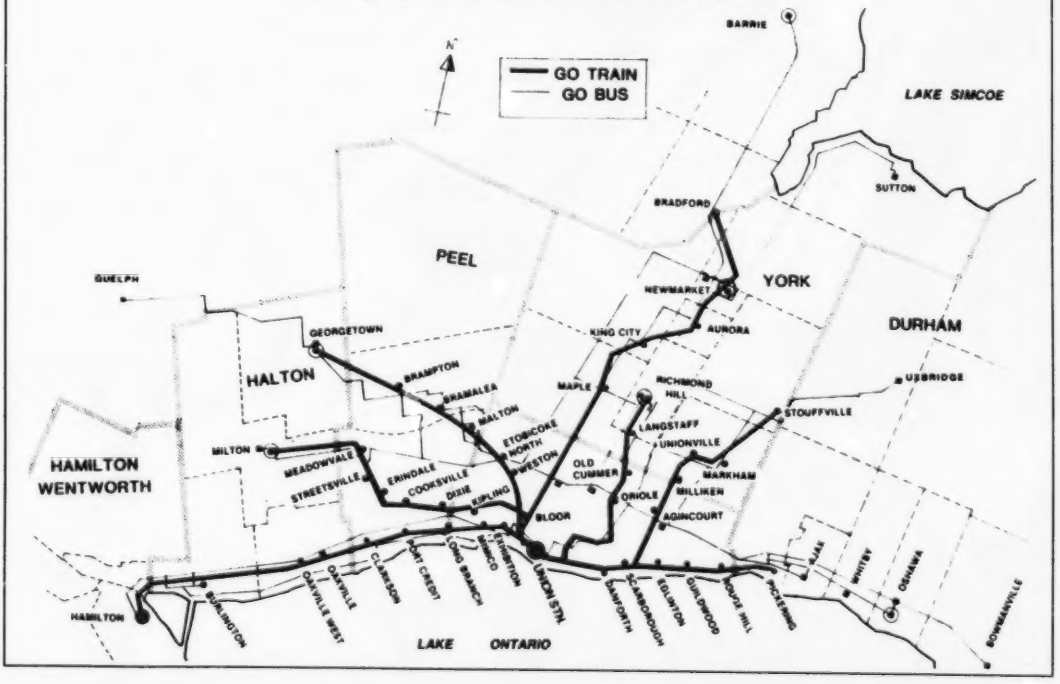
Following the recommendations of the GO-ALRT and Network 2011 study programs, considerable support, including that of City and Metro Councils, has been given to the idea of better integrating the service and fare structures of the GO and TTC transit systems as well as other municipal transit systems in the Metro Region. The basic aim is to encourage higher overall transit use by making it more convenient and cheaper to combine TTC and GO Transit trips. However, fare and service integration will likely require higher transit operating subsidies and, given the current differences in TTC and GO Transit funding arrangements, there are financial and operating policy issues which have first to be resolved. At present, there are no estimates of the levels of increased government subsidies that may be required.

The Harbourfront LRT line, the proposed Spadina LRT line and the Downtown Relief line are shown on Map 3. Maps 4 and 5 illustrate the existing network of GO Transit services. The cost estimates of these major road and transit improvements are only in rough figures, but it can be seen that they total to the hundreds of millions, though they would not all be undertaken at once and some are only identified as options at this stage.

Map 4
Existing Go-Rail Services



Map 5
Existing Go Train Stations and Bus Routes



6.3 Other Local Transportation Improvements

As mentioned earlier, there are, in addition to the major regional proposals, a number of more localized transportation improvements within the Central Area which are under consideration, the most notable of which are:

1) The proposed changes to the Gardiner/Lake Shore ramp system between Bathurst and Jarvis Streets;

2) The new local road system for the Railway Lands, including the rebuilding and widening of the Spadina Avenue bridge;

3) The Dufferin Street jog elimination and extension;

4) Changes to the local road system associated with the Massey-Ferguson development, including the grade separation of the Strachan Avenue railway crossing;

5) The TTC's $11.4 m. proposal to improve passenger safety and comfort at the Bloor/Yonge subway interchange (see Table 8 for a summary of these improvements);

6) The applicability of freeway management techniques to the operation of the central, downtown section of the Gardiner/Lake Shore corridor;

7) The work of the Gardiner Expressway Task Force in seeking to reduce the barrier effects of the Gardiner/Lake Shore corridor; and

8) Improvements to Union Station.

Table 8
Improvements to Yonge-Bloor Station

		Estimated Cost	Construction Start	Construction Completion
1.	West Entrance (connecting directly to Bloor Subway Platform)	4,770,000	July 1/87	Dec. 31/88
2.	Reconstruction of South Entrance by Developer	–	Oct. 1/88	Sept. 30/90
3.	Provision of Wall Openings (connecting Yonge Subway platforms with the mezzanine)	520,000	July 1/87	Dec. 31/87
4.	Yonge Subway Platform Widening	4,500,000	Oct. 1/88	Dec. 31/89
5.	Station Modernization Changes	1,600,000	Jan. 1/90	Sept. 30/90
	Total	**11,440,000**		

Source: TTC report "Station Modernization Programme - Improvements to Yonge-Bloor Station", September 17, 1986

6.4 The Total Package of Improvements

During the course of the recent OMB Hearing on the Railway Lands, the regional and local transportation improvements listed above were presented as a package of proposals and options which, if implemented, could accommodate the highest estimates of Central Area employment growth over at least the next twenty years. Depending on the actual rate of employment growth experienced, not all of these proposals may prove necessary in the next twenty years and some may be replaced by other transportation options of equal capacity. As will be discussed more fully later, a further complication arises from the fact that the rate of Central Area employment growth may itself be influenced by the staging or timing of major transportation improvements and the two elements of land use and transportation cannot be looked at independently in this context. In the broadest sense, the transportation improvements listed above provide an indication of the likely level of infrastructure investment required to maintain a long-term balance between transportation capacity and development capacity in the Central Area based on current knowledge and assumptions.

As is true for most lists of future requirements for major public investments, so this one will, over time, be subject to review and modification. Currently, of the major Central Area transportation proposals described above, City planning staff have given top priority to incremental expansion of the GO train services, TTC and GO transit fare and service integration, and the Front Street Extension/Gardiner widening proposals. This preference has been expressed to the Regional Transportation Planning Forum as part of the overall exercise of determining transportation investment priorities within the Greater Toronto Area.

6.5 The Method of Analysis in Context

As alluded to earlier, City planning staff's conclusions regarding future long-term Central Area transportation requirements are largely based on a comprehensive, computer-modelling exercise undertaken as part of the research for three inter-related planning reports produced in late 1983 regarding the Railway Lands Development Concept, the Official Plan transportation amendments and the City's response to the "CWTS" Study. This modelling approach looked at the entire Central Area and identified sufficient office development potential to accommodate an estimated employment increase of 120,000. At the time, such an increase was estimated to represent at least twenty year's growth for the Central Area, even with the full approval of the Railway Lands development proposal. The estimated timing of the need for certain transportation improvements, as presented in the Railway Lands Concept report (Sept. 1983), was based on the assumption of a future average absorption rate of 165,000 sq. m of office space being built and occupied each year in the Central Area. More recent analysis conducted in relation to the Network 2011 exercise has shown that the use of such simple linear projections may be questionable. This issue is discussed later in more detail.

However, the computer-based analysis, as reported in 1983, was applied to the whole Central Area employment base, meaning both existing and future growth, and including consideration of changes in non-office work trips. Consequently, the potential for producing the misleading findings that can sometimes result from a purely marginal analysis of the impacts of future, additional development and employment growth were avoided. Projected changes in such critical variables as the FSW ratio, peak-hour factor, vacancy rate, modal split and trip distribution were applied across the board to both existing and future trip projections. In this context, a variable that became singled-out as being of particular significance was that of the assumed trend in the modal split of Central Area office workers.

6.6 The Modal Split Issue

In the original Parkinson analysis the assumption was made, on the basis of the policy of no road improvements, that all future increases in peak-hour commuting would be by transit. That is to say, at the margin, the modal split was assumed to be 100% towards transit. In the 1983 analysis, it was apparent that, with the levels of development permitted under the existing planning provisions, it was no longer reasonable to assume that there would be no future increases in the level of peak-hour automobile commuting into the Central Area. In fact, as described earlier, cordon count data for the 1975-85 period show that the 100% transit assumption never really applied. Consequently, the 1983 analysis recognized that there would be increases in peak-hour auto commuting but, on the evidence of certain past trends and projections, it was assumed that in relative terms the auto would continue to experience a diminishing role in total peak-hour travel.

The key modal split assumption made in the 1983 analysis was that, overall, the percentage of peak-hour office commuters travelling by auto to the Central Core would decrease from the estimated 1983 level of 21% to a future long-run level of 16%. On the basis of the 120,000 employment increase forecast, this 25% decrease in the relative use of the auto resulted in a total projected increase of 3,800 peak-hour, office, auto trips. Without such a decrease (i.e. if the 21% is maintained) the resulting figure would have been 13,200 additional peak-hour auto trips. Obviously, there could be serious consequences if the assumed modal shift is not achieved and all the other factors in the traffic projection model prove correct. City planning staff, in a response to a request from City Council, reported quite extensively on the modal split issue in July, 1985, and this lead to the commissioning of a consultant study on the use of parking controls as a means by which to achieve a target modal split. This study is currently underway.

The 1985 cordon data for the Central Area, as brought out at the Railway Lands Hearing, show a slight increase in the modal split towards auto use during the peak-hour for the 1981-1985 period(see Table 3). However, it should be pointed out that this relative increase in auto use has occurred over a period when total peak-hour trips into the Central Area have marginally declined. In particular, subway ridership has decreased from its 1981 peak level, while auto and auto passenger trips increased modestly over the 1981-5 period, although not fully recovering to their peak levels of 1979. Also, as evident from earlier sections of this report, the modal split factor is not the only variable that can critically impact on future travel projections and others, such as the employment projections, the peak-hour factor and the absenteeism rate, can be of considerable significance too. The modal split issue is being studied and is an important element in the present Central Area monitoring process. The joint Metro/City "Central Area Monitoring Program" (CAMP) is expected to be reporting shortly on, among other things, the findings of a recent survey on the modal split of arrivals at a selected sample of Downtown office buildings. Such surveys will, in the future, be conducted on an annual basis to enrich the more general cordon count data which is collected every two years.

6.7 The Need to Amend the Transportation Section 7 of the Official Plan and The Timing of Transportation Improvements

As discussed above, previous planning reports have identified the need to reconsider the appropriateness of continuing to pursue Official Plan Amendment No. 170 and to review the existing Official Plan Statements 7.2(b) and 7.5. When looking at the Central Area as a whole,

there can be little doubt that at some future point additional road and transit capacity will be required to adequately serve the permitted level of development potential. In particular, the Front Street Extension and Gardiner Expressway widening proposals, which are currently considered as high priority regional road improvements, will require the amendment of Section 7.2(b) of the Official Plan.

However, it is not proposed that specific amendments to Section 7 of the Official Plan be brought forward here for Council's consideration. It is considered more appropriate, at this time, to await the outcome of the various studies in progress regarding the design and feasibility of the numerous transportation options being looked at for the Central Area. Also, the City is currently engaged in a series of studies on Downtown employment growth prospects, the results of which may influence current planning attitudes towards the need, priority and timing of certain Central Area transportation improvements. In view of this situation, this report recommends that a continued and comprehensive review of Section 7 of the Official Plan take place over the forthcoming months with the aim of producing a final set of proposed amendments by the end of 1987.

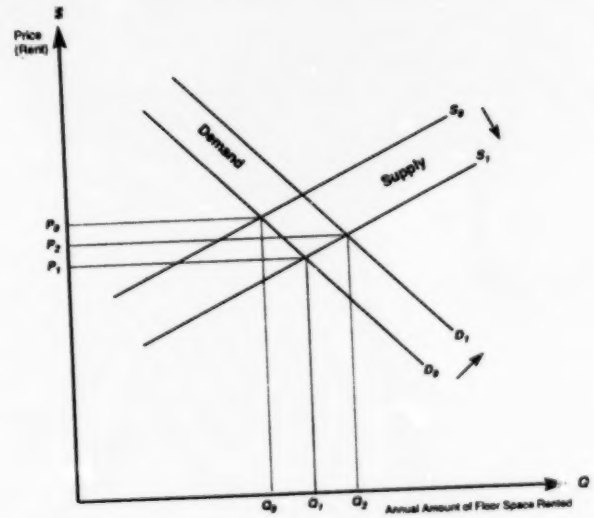
However, it should be made clear that the purpose of such a review is not to reverse the general direction of the City's current transportation policies but rather to modify these policies to better address the present problems associated with maintaining an adequate balance between land use development and transportation capacities. It is the conclusion of this Quinquennial Review that the City's transportation policies should generally reflect an incremental approach to transportation planning which allows improvements to be made in stages as required while establishing a monitoring and review process to ensure that needed services can be provided at the appropriate time.

From a regional perspective, the timing of major, Central Area transportation improvements is still important in relation to the policy of deconcentration. A major reversal of the City's current transportation policies could signal the return to a pattern of centralized growth and focus development pressures on the Central Area to the neglect of the suburban sub-centres. It remains important that the City's and Metro's transportation policy decisions be generally directed to supporting and strenghtening the development of the emerging sub-centres. This is not to say that the transportation needs of the Central Area should be ignored but, where possible, incremental improvements to the Downtown transportation system should be pursued and the maximum resources possible made available to improve access to the sub-centres and stimulate their growth.

In an earlier discussion it was noted how increasing Central Area commercial development rights, through either up-zoning or widened boundaries, might produce a supply-side effect that could lead to an increase in the rate of Downtown office development (see Sections 3.0 and 5.3). This process could be further reinforced by major transportation improvements which, by increasing the relative attractiveness of the Central Area, would create complementary demand - side effects that further increase the rate of Downtown development. This impact is shown schematically on Figure 7 which combines the impacts of an upward shift in the demand curve resulting from improved access with the supply-side effects of zoning changes discussed in relation to Figure 6. The upward shift in the demand curve is attributable, in principle, to the fact that, by improving access to the Central Area, office floor space becomes more valuable or attractive and hence, for any given price or rent, more of it will be consumed. Figure 7 also illustrates how improved access could compound the effects of up-zoning by moving the equilibrium rate of annual office space absorption even higher from amount Q1 to Q2. It is in this sense that land use and transportation decisions cannot be

considered independently. To some degree, the provision of transportation services can effect the level and rate of development and this is why the timing of Central Area transportation improvements is of significance to the policy of deconcentration.

Figure 7
Combined Effects of Increased Development Potential (Supply) and Improved Transportation Access (Demand)



7 Future Uncertainty

As the various Background Papers illustrate, the Greater Toronto Area has been undergoing considerable changes over the 1975-86 period with respect to such factors as the patterns of population and employment growth, the growth, distribution and utilization of office space and commuter travel. Some of these changes are directly impacting on future development trends and trip growth in the Central Area and are making it increasingly difficult to accurately forecast the need for and timing of future transportation improvements. In this context, there appear to be five principle areas of uncertainty regarding the timing of Central Area transportation improvements:

1. The future rate of Central Area office employment growth;
2. The future relationship between increasing demands for office space and the growth in Central Area peak-hour, work trips;
3. Rate of change in employment in the non-office sector in the Central Area and changes in non-work related activities;
4. The future impact of new housing in the Central Area, and
5. Regional population trends.

Although each of these areas is dealt with at length in the relevant Background Papers, they are briefly discussed here with particular reference to their implications for transportation planning decisions in the Central Area. However, before proceeding with this discussion, it is useful to remember that the analysis is based on several data sources which, in certain cases, cover different time periods and which can be of varying degrees of accuracy. For example, Census journey to work data are only available for the years of 1971 and 1981, while reliable Metro annual employment counts only go back to 1981 and 1983 for full and part-time workers respectively. Also, there can be apparent discrepancies between different data sources that cannot always be fully reconciled. (For more details see Appendix C of Background Paper No. 7)

7.1 The Future Rate of Central Area Office Employment Growth

As the "Network 2011" report points out, "... the single most important factor influencing downtown transportation policies over the next two decades will be the demand for transportation generated by work trips to downtown offices." In subsequent reviews of the "Network 2011" studies, considerable comment was made upon the wide range of recent employment projections that have been made for the Central Area. For relatively small-area projections, such as for the Central Area, the common approach in transportation planning is known as the "bottom-up" method whereby employment growth estimates are derived from projections of commercial floor space development. There seems to be a tangible quality about employment forecasts based upon known development proposals that is understandbly appealing to forecasters. However, bottom-up forecasts usually produce employment projections which, in the aggregate, exceed those derived from demographic and economic (i.e. top down) forecasts. Local estimates of development potential are usually optimistic and tend, in total, to produce unachievable employment levels at the area-wide or regional scale.

For example, as noted earlier, the 120,000 increase in office employment developed by City planning staff was based upon an exhaustive listing of all known Central Area office development proposals which, in 1983, totalled approximately 3.4 million sq. m of floor space. This total represented close to the remaining office development potential of the Central Area and can be viewed as a high employment growth estimate that represents, from a transportation planning point of view, a "worst case" scenario. There is evidence to suggest that such simple linear projections of high rates of Central Area employment growth, which are based on certain past assumptions concerning the relationships between floor space, employment and trip growth, no longer adequately reflect future conditions.

Previous sections of this report have already questioned the continued validity of some of the assumptions currently applied in this type of bottom-up forecasting procedure and the complicating factors of the supply- and demand-side effects of zoning changes and transportation improvements have also been referred to. From the top-down perspective, there are indications that the economy as a whole may be slowing down and that the 80's and 90's will not see the sustained levels of rapid growth experienced in earlier decades. Although the worst of the 1981-83 recession is over, the current economic recovery may not prove strong or lasting. For example, in a recent report commissioned by the Metro Economic Development Division entitled "Five-Year Forecast of Economic Conditions in Metrpolitan Toronto" (April 7, 1986), a slowdown in the pace of economic growth across all sectors of the Metropolitan economy is forecast. The report states "1986 will be the crest of the most recent wave of strong economic growth which began in late 1982... indicators of economic performance lend support to the message of continued, albeit slower, growth".

Table 9 presents the Metropolitan Planning Department's employment counts for the 1981-85 period for the Financial District and the Central Area. These figures indicate that there has been little growth (1%) in full-time office employment in the Central Area during the 1981-85 period and in the Financial District there was actually a slight decrease over the same time period. Part-time employment figures, which are only available since 1983, indicate considerable growth in both the office and non-office sector over the 1983-85 period. Approximately 45% of the total increase in all Central Area employment over the 1983-85 period has been in the part-time category. Furthermore, over half the total employment increase in this two year period has been in the non-office sector. Consequently, a large part of the recent employment recovery in the Central Area has been in part-time non-office activities.

Table 9
Employment in the Financial District and Central Area
1981-1985

	Financial District					Central Area				
Land Use	**1981**	**1982**	**1983**	**1984**	**1985**	**1981**	**1982**	**1983**	**1984**	**1985**
Office										
Full Time	81,680	81,098	78,143	79,341	78,319	206,918	204,185	201,201	208,644	211,433
Part Time	n/a	n/a	640	1,425	2,139	n/a	n/a	5,689	6,531	9,364
Total	**n/a**	**n/a**	**78,783**	**80,766**	**80,458**	**n/a**	**n/a**	**206,890**	**215,175**	**220,797**
Non Office										
Full Time	10,690	11,089	8,950	10,775	10,726	128,821	115,579	115,058	120,889	121,295
Part Time	n/a	n/a	2,982	3,528	3,599	n/a	n/a	19,865	25,743	28,817
Total	**n/a**	**n/a**	**11,932**	**14,303**	**14,325**	**n/a**	**n/a**	**134,923**	**146,632**	**150,743**
Total										
Full Time	92,370	92,187	87,093	90,116	89,045	335,739	319,764	316,259	329,533	333,359
Part Time	n/a	n/a	3,622	4,953	5,738	n/a	n/a	25,554	32,274	38,181
Grand Total	**n/a**	**n/a**	**90,715**	**95,069**	**94,783**	**n/a**	**n/a**	**341,813**	**361,807**	**371,540**

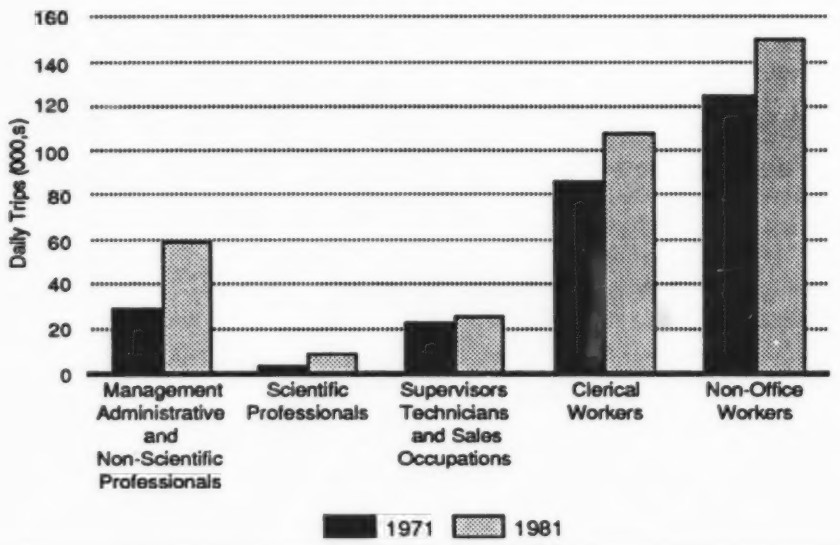
Source: Metro Planning Department, Employment Survey, 1981-1985

Note: n/a = not available. Part time data were first collected in 1983.

There appear to be certain structural and technological changes taking place in the economy that may lead to slower Central Area office employment growth. A sub-committee of the City's Economic Development Committee is currently conducting a series of consultant studies on downtown employment growth prospects, with particular emphasis on the impacts of technologcal changes on the office sector. Until these studies are complete, it is only possible to speculate on the nature of some of these trends. As noted in Background Paper No. 2 and in an earlier section of this report, there is evidence to suggest that technological changes are resulting in the downtown office labour force becoming increasingly specialized in the managerial/professional functions. For example, census journey to work data show that, over the 1971-81 period, trips to the Central Area in the management/professional group have increased the fastest in both absolute (35,000 trips) and relative (103%) terms and at rates beyond the regional average. Figure 8 illustrates this pattern of change (see Background Paper No. 7, Table 1 for more detail).

If Central Area office employment is becoming increasingly concentrated in the relatively small "executive" sector, the future rate of overall office employment growth might be expected to slow down. As a corollary, it is expected that "back office" activities, such as routine clerical functions and data processing, which employ the majority of office workers, will increasingly locate in suburban centres where office space is cheaper. With future Central Area office employment growth increasingly occurring in the executive sector, the impacts on peak-period commuting might also be less than expected due to possible differences in travel characteristics. For example, high status office employees might be expected to work more irregular hours and spend more time away from the office or out-of-town than those involved in more routine office functions.

Figure 8
Central Area Work Trips
by Type of Occupation
1971-1981



In conclusion, the 1981-85 period has seen little increase in total Central Area office employment and a large part of what gains there have been occurred in the part-time employment category. Future economic trends suggest that the employment growth rate may slow down, particularly in the Central Area if such growth becomes increasingly focussed on the narrower base of executive office functions. Associated with these possible changes in the composition and rate of growth of Central Area office employment are impacts on future transportation demands that may lead to a slower rate of peak-period trip growth.

7.2 The Future Relationship Between Increases in Office Space and Peak-Hour Travel Demands

Earlier sections of this report have explained how trends in such factors as the FSW Index, the vacancy rate and the "absenteeism" rate are leading to a re-evaluation of travel demand forecasts based on the conventional bottom-up (i.e. land use) method. It has also been pointed out how these changes have to be applied to existing as well as future development to fully appreciate their effects.

Current trends suggest that there may continue to be a relatively strong demand for new office space in the Central Area despite a slowdown in the rate of office employment growth. Such a situation could result primarily from the influence of two factors; continued increases in the FSW index and an increasing need for new office space in the form of "smart" buildings. An increasing proportion of "executive" employees and the need for larger work areas to accommodate new equipment as a result of office automation could contribute significantly to an increase in the average FSW ratio in the Central Area. Apart from the impacts on the amounts of floor space required per worker, technological changes may also be creating requirements for a new type of office space in "smart"

buildings (see Background Paper #2 for a discussion of the smart building phenomenon). In this context, new office buildings might be built as essentially replacement space for old buildings with little net impact on employment and commuting levels in the Central Area.

Also, recent increases in the office vacancy rate have led to attractive leasing offers that have caused some firms to acquire additional space ahead of demand. This trend will have contributed to an increased FSW index in the Central Area. Also, if a trend towards the occupancy of new buildings at the expense of old ones is beginning to occur in response to the demands of technological change, a higher equilibrium vacancy rate might result from this restructuring of the office market.

All the factors described above, to the extent that they prove true of the future, will serve to weaken the relationships between office space development and employment and trip growth in the Central Area.

7.3 Changes in the Non-Office Sector In the Central Area

Although most Central Area employment growth is expected to be in the office sector, the past declines in certain other sectors, particularly manufacturing and warehousing, are expected to level out in the future. Consequently, future Central Area office employment gains are expected to be less offset by reductions in other employment types.

Employment data for the 1981-85 period show modest increases in the service (3,800) and institutional (3,700) employment categories, with much of this increase in the Central Area being made up of part-time employees. Industrial employment in the Central Area has remained stable over the 1982-85 period with little change in the part-time component. Surprisingly, perhaps, retail employment in the Central Area has declined slightly over the 1981-85 period, with only a slight increase in the already relatively high level of part-time workers.

As the Central Area continues to grow as a cultural, recreational, educational, entertainment and institutional centre, it can be expected that employment levels in these sectors will continue to grow. In many cases, these employment increases may not, of themselves, be of particular significance, since many of these activities involve work trips outside the traditional peak-periods. However, these activities contribute to a fuller, 24-hours a day, use of the Central Area and may give rise to certain local traffic problems or off-peak problems such as loading. An emerging example of these types of problem can be found in the west Downtown area where a number of facilities such as the Convention Centre, Roy Thompson Hall, Harbourfront, the theatres and restaurants, as well as the planned Dome Stadium and CBC development, can potentially combine to produce off-peak traffic, parking and pedestrian problems.

The potential for this broadening set of Central Area uses means that not all future transportation planning attention should be directed solely to office development impacts but will require an increasingly comprehensive and integrated approach to address the complexities of the full-range of Downtown activities. For example, the Harbourfront LRT was approved in large part on the basis of providing better access to the recreational activities of the Waterfront.

Although peak-hour traffic into the Central Area has shown no pattern of steady increase over the 1975-85 period, the peak accumulation totals for the Central Area do show an increase. This increase in peak accumulation trip totals reflects a greater all-day use of the Central Area for a wider

variety of functions and partly explains why it is becoming increasingly difficult to find the "off-peak" period on certain road and transit services.

7.4 The Impact of New Housing In the Central Area

At present there is considerable uncertainty regarding future population and labour force trends in the City. Recent studies indicate that there could be a significant increase in the Central Area labour force that might reduce future increases in long distance commuting.

Although the City's population fell by 113,000 between 1971 and 1981, increases in the labour force participation rate, particularly among women, meant that the City's labour force only declined by 23,000 over this period. Recent data indicate that the City's population is experiencing a modest increase as it recovers from the low point of 1981 and the Central Area, in particular, has been the principal contributor to this growth. The Central Area experienced strong residential growth over the 1976-85 period with nearly 17,000 new housing units being added. Future projections call for continued residential development in the Central Area which is now considered by Metro planners to be one of the few areas of significant population growth left in Metro.

In revising their travel projections for the "Network 2011" Study, Metro planners increased significantly the projections of Central Area population growth while generally reducing expected population growth elsewhere in Metro. Originally, using the GO-ALRT 'A' land use scenario figures, Central Area population was projected to increase by 30,000, from 112,000 in 1984 to 142,000 in 2011. The revised projections, based on Metro's recent M1-85 forecasts, now indicate a 70,000 population increase over this period. Given the characteristics of people living in the Central Area it can be expected that an above average proportion of this population increase will be in the labour force.

The impacts of assuming a higher rate of Central Area population and labour force growth on future travel patterns are quite dramatic. This point is best illustrated by reference to the "Network 2011" Study, where the following (see Table 10) comparison is made between projected peak-hour trip increases to and within the Central Area (1981-2011) on the basis of the GO-ALRT 'A' and M1-85 land use scenarios:

Table 10
Comparison of Travel Demand Forecasts for the Central Area
(A.M. Peak-Hour Total Person Trips to the Central Area)

	1981 Simulated	2011 GO-ALRT 'A'	2011 M1-85
From:			
Central Area	26,750	32,550	41,700
Rest of Metro	126,850	135,250	128,000
Outside Metro	21,150	45,800	43,800
Total Trips	174,750	213,650	213,500

The revised M1-85 figures result in a lowering of the forecasted increase in trips to the Central Area from the rest of Metro. The original 8,400 increase in such trips (i.e. 135,250 - 126,850) is reduced to only 1,150 in the revised estimate. This 7,000 reduction in trips from the "rest of Metro" is more than made up by the 9,000 increase in trips from within the Central Area generated by the M1-85 population forecasts. Also, the majority of these new internal Central Area peak-hour work trips are expected to originate in the area south of College Street where most the new residential development is forecast to occur. Such increases will, consequently, place little added demand on the critical loading points of the subway.

The M1-85 projections produce a modest decrease in forecasted trip growth from the Regions outside Metro to the Central Area, with this decrease again being picked-up by increases within the Central Area itself. Overall, the recent Metro projections of peak-hour trip growth into the Central Area over the next 25 years show major growth from the Regions (22,650) and within the Central Area (14,950), with little growth (1,150) in the remainder of Metro. However, as noted above, these forecasts are particularly sensitive to assumptions regarding the future rate of population and labour force growth in the Central Area. Clearly, these factors, along with patterns of residential development in the Central Area, need to be carefully monitored in the future and their effects on transportation needs assessed.

7.5 Regional Population Trends

As noted in earlier sections of this report, population and employment projections suggest a continuing imbalance in the regional pattern of population and employment distribution. To a large extent employment increases in Metro will have to be met by the expanding population and labour force of the surrounding region and increases in cross-boundary commuting will inevitably result. Unlike the Central Area, Metro's labour force is expected to marginally decline after 1996 following the expected stabilization of the female labour force participation rate in the early 1990's and the general aging of the Metro population.

Consequently, large increases are predicted in inter-regional commuting across the Metro boundary. 1975-85 cordon data indicate that the total volume of inbound, peak-period person trips has increased by 92% at the Metro boundary, compared to increases of only 10% and 20% at the Central Area and Downtown cordons respectively. Census journey to work data for the 1971-81 period show similar trends with a more than doubling of the number of work trips to Metropolitan Toronto from the surrounding regions and an increase in the average length of work trips in Metro from 10.2 km to 11.8 km.

With little trip growth predicted to the Central Area from the rest of Metro and over 90% of future regional growth expected to occur beyond the Metro boundary, it is easy to see why GO transit is expected to play an increasingly important role in serving Downtown employment growth. Also, in terms of increasing the attractiveness of transit for inter-regional commuting trips, there appear to be considerable advantages to integrating the fare and service structures of the TTC and GO transit systems. For example, the existing separate fare systems limit the attractiveness of taking GO transit to the Central Area for those working beyond walking distance of Union Station.

However, as with the Central Area projections, population and labour force forecasts for the region are replete with assumptions ranging from birth rates, death rates, migration patterns, labour force

participation rates to many economic matters over which planners have little or no control. Consequently, the long-range trajectories of these regional forecasts must also be carefully monitored and reviewed with the progress of time and adjustments made as necessary. (See Background Papers Nos. 3 and 7 for a fuller discussion of the issues raised here.)

7.6 The Difficulties of Traffic Forecasting

When looking at the experience of the Central Area in general with respect to the relationship between office development and peak-hour trip growth betwen 1975-85, two separate or distinct periods appear to emerge.

Between 1975 and 1981 the amount of office floor space in the Central Area increased by 22%. from 4.08 m sq. m. to 4.96 m sq. m. This increase was in turn matched by an 18% rise in peak-hour, inbound passenger trips into the Central Area which increased from 122,890 to 144,832 trips over the 1975-81 period. These figures reflect the traditional positive relationship assumed between floor space and trip growth.

However, in looking at the 1981-85 period the story is somewhat different. Over this period the amount of office floor space in the Central Area increased by 15% from 4.96 million sq. m to 5.71 million sq. m. However, peak-hour, inbound passenger trips over this period marginally declined by 3.3% from 144,832 to 140,124 trips. As noted above, full-time Central Area office employment showed little change over the 1981-85 period despite a 0.75 m sq. m (8.0 m. sq. ft.) increase in office space. The 1981-85 period reveals little, if any, positive relationship between floor space growth and associated increases in employment and peak-hour trips.

The conventional explanation for the 1981-85 situation relates to such factors as the impact of the 1981-83 recession, an increase in the Central Area office vacancy rate, an increase in the FSW index and continuing employment losses in the non-office sector. It is argued that if the economy picks up again to the high growth levels of the 70's, then the 0.54m sq. m. of vacant Central Area office space would quickly become occupied along with further new developments and the traditional relationship between floor space and trip growth restored.

However, this review has tried to suggest that the explanation may not be that simple and there may be economic, technological and social changes in progress that are altering the relationship between development levels and trip growth assumed in the past. Office development rates and associated employment increase are not a simple linear function of zoned capacity, but relate to a host of factors on both the supply and demand side, including the provision of transportation services.

8 Summary and Conclusions

Upon review, it is the principles of the 1976 Central Area Plan, rather than its mechanism, which appear to be of most significance. For example, the exact details of the original Parkinson transportation capacity estimates and their translation into permitted office development limits become of less interest and relevance with the passage of time. What remains of importance is the continued applicability of the general principles of the Central Area Plan with regard to limiting office development to the level of available transportation capacity in order to promote the wider Metro planning strategy of deconcentration and to achieve various other local planning objectives (see Section 1A.3 of the City's Official Plan).

As to be expected, over the last ten years the policies and provisions of the Central Area Plan have undergone revisions in response to the processes of urban change. Official Plans are not intended to be immutable documents and the planning process explicitly provides the flexibility of modifying such Plans to adapt to new circumstances where warranted by planning arguments. Over the last ten years, the land use component of the Central Area Plan has experienced considerable modification. Originally, the intention was to control office development in the Central Core to between 6.55 million sq. m (70 m. sq. ft.) and 8.18 million sq. m (88.0 m. sq. ft.). The current level of permitted development is now around the 9.75 million sq. m (105 m. sq. ft.) mark and could extend beyond this depending on the set of redevelopment assumptions that are applied.

Consequently, it has been identified that, in the long-run, an imbalance will emerge between the development capacity and the transportation capacity of the Central Area. The identification of future transportation capacity deficiencies has led to the development of a number of road and transit proposals, at both the local and regional scale, to accommodate future growth in the Central Area. These proposals, if implemented, will in certain cases require amendments to the City's and Metro's Official Plans. The question that then arises is does the contemplation of such amendments weaken the deconcentration strategy and undermine the principles upon which the Central Area Plan is based?

To address this question a number of factors have to be considered. First, it is unrealistic to assume that the Central Area Plan intended to permanently place an absolute limit on the amount of office development in the Central Core. The Plan contains office development review limits for the years 1981, 1986 and 1991 and it does not appear that these limits will be breached. Consequently, for a period of fifteen years (1976-1991), the Central Area Plan will have been successful in controlling the rate of office development to a level that has not required the provision of major regional transportation improvements to serve the Central Area. This success has provided an extended period of time over which to direct energies and funds to the promotion of the policy of deconcentration. The suburban sub-centres are becoming established and their future growth is generally considered, as evidenced by the recent OMB decision on the Railway Lands, to be independent of land use proposals in the Central Area.

However, the policy of deconcentration will be affected by the timing and priority of major transportation improvements and there is a need to achieve a future balance in the pattern of such infrastructure investments to ensure that continued support is given to the growth of the sub-centres while not ignoring the long-term transportation needs of the Central Area. In this context, the continued and controlled growth of Central Area development to levels that will eventually exceed those initially established by the medium-term horizons of the 1976 Central Area Plan, is not seen as

posing a threat to the policy of deconcentration or contradicting the Plan's original transportation planning policies which have now largely served their purpose.

The key factor determining the need for and timing of regional transportation improvements to the Central Area will be the rate of Downtown employment growth and the impacts of such growth on peak-hour commuting levels. As explained above, there is considerable uncertainty regarding future Central Area employment projections. A sub-committee of the City's Economic Development Committee is currently directing a number of consultant studies regarding Downtown employment trends, with particular emphasis on the impacts of technological change on the office work force. In the absence of the results of these studies, it is difficult to draw definite conclusions at this stage but there are indications of economic, social and structural changes that are impacting on the composition and rate of growth of Downtown employment.

Economic indicators suggest that employment growth in the late 80's and 90's may not recover to the high growth rates of earlier decades. Also, technological changes in the office sector, particularly those related to computers and telecommunications, suggest that the Central Area may become increasingly dominated by managerial/professional workers and that "back office" functions, such as routine clerical work and data processing, will tend to move to suburban locations. Consequently, future office employment growth in the Central Area may be focussed on a smaller and narrower base of activities resulting in a higher proportion of "executive" employees and a changing pattern of commuter travel.

However, there are other changes occurring which suggest that there may be a continued strong growth in Central Area office space development despite relatively slow employment growth. This situation could primarily result from the influence of two factors; continued increases in the FSW index, and on increasing demand for new office space in the form of "smart" buildings. The FSW index may continue to increase as a result of office automation and an increasing proportion of "executive" employees. New "smart" buildings might provide essentially replacement space for older, obsolete office buildings. The net result of these factors could be to significantly weaken the traditional positive relationship assumed to exist between the variables of floor space development, employment growth and increases in peak-hour commuter travel.

Further factors contributing to the uncertainties of relating Downtown development to trip growth relate to possible future increases in the Central Area's resident labour force and changes in the regional patterns of employment and population growth. Current forecasts indicate that most of the future increases in Central Area commuting will be either from within the Central Area itself or the regions surrounding Metro, with little increase from within the rest of Metro. Consequently, incremental improvements to the GO-train system serving Union Station, along with fare and service integration with the TTC, are seen as the current transit priorities for the Central Area. Similarly, the Front Street Extension and Gardiner widening are seen as the priority road improvements needed to accommodate increasing levels of auto commuting from the most rapidly expanding areas of population growth to the west and north in Peel and York Regions.

However, beyond these most immediate priorities, it is difficult to accurately predict the need for and timing of other Central Area transportation improvements. Primarily as a result of the CWTS and Network 2011 studies, a long-term framework of possible transportation improvements has been identified and the individual elements of this framework have been described above. However, certain elements are presented only as long-term options (such as the proposals for the

Downtown Relief Line and the Leslie Street Extension) and may never prove to be needed or might be replaced by what are found in the future to be more appropriate alternatives. It would be misleading to attempt to define a rigid schedule for the implementation of a precise set of Central Area transportation improvements over the next twenty or so years. Instead, it is recommended that the greatest attention be given to the immediate transportation priorities and, beyond these, subsequent commitments to other elements of the overall framework should be based upon further reviews at later dates. This approach stresses the incremental development of the transportation system serving the Central Area and emphasizes the need for the continued monitoring of land use and transportation relationships in the Central Area. City, Metro and Provincial staff are currently in the process of jointly developing an improved Central Area Monitoring Program (CAMP) along these lines and which would supplement, on an annual basis, the five-year reviews to be undertaken as part of the Network 2011 Program and the up-dates of the Metro and City Official Plans.

Among the important criteria to be monitored annually in the future will be the trends in modal split. The framework of transportation improvements described in this report is based upon the assumption of a shift in the peak-hour modal split of Central Area office workers from auto to transit. Under this assumption, only relatively modest long-term improvements in the regional road network are required (namely, the Front Street Extension, the Gardiner widening and an additional lane of capacity from the north-east). However, in recognition of the importance of this assumption, City Council have currently engaged a transportation consultant to study possible ways of ensuring the modal split target is achieved if the trends projected in the City Planning staff's analysis of 1983 do not materialize. Other important additional criteria to be monitored that this report has suggested include: the impacts of Central Area residential development on commuting levels; the impact of part-time workers on travel demand; the changing composition of office employees and associated changes in their travel patterns, and the changing use of the existing office stock as new, technologically advanced buildings are developed.

Given the situation outlined above, it is suggested that the most appropriate course of action is to await the outcome of the various studies in progress, particularly those relating to the Front Street and Gardiner widening proposals, before proceeding to recommend specific amendments to the Transportation Section of the City's Official Plan. Such amendments will be brought forward by the end of 1987. By this time, the results of the City's Downtown Employment Studies will also be available. However, it should be made clear that it is not the intention of this forthcoming review process to reverse the general direction of the City's current transportation policies. The aim is to modify these policies to ensure an adequate level of future service for the Central Area while maintaining a balanced investment pattern at the regional scale with respect to the transportation needs of the suburban sub-centres. The timing of major Central Area transportation improvements remains a matter of some consequence to the policy of deconcentration.

Finally, it should be pointed out that there is, perhaps, a tendency to over-emphasize the question of the need for major regional transportation improvements resulting from the growth of Central Area office development and employment. Two observations should be made in this regard. First, there are currently many important local transportation improvements currently under study in the Central Area that offer considerable potential for improved local traffic and pedestrian conditions in the Central Area. Secondly, not all transportation problems are exclusively confined to those of peak-hour office commuters. As the uses and activities of the Central Area become increasingly diverse, so the range of traffic, parking and pedestrian problems increases. The challenge posed by the location of the Dome Stadium in the West Downtown "entertainment" section (which includes the

Convention Centre, Roy Thompson Hall, Harbourfront and numerous restaurants and theatres) was quoted earlier as an example of this type of broadening of Downtown transportation issues which increasingly call for comprehensive and integrated planning approaches to effectively address the complexities of the range of issues involved.

Many of the local transportation proposals provide the opportunity to achieve additional benefits which are not just related to improved traffic conditions. Such benefits relate to the opportunities to provide enhanced pedestrian connections, to reduce perceived barrier effects and rationalize the local pattern of land uses and transportation facilities. For example, taken together, the proposals to change the Gardiner/Lake Shore ramp system, the strategy to develop the blocks and streets plan for the Railway Lands and the work of the Gardiner Expressway Task Force, provide a significant opportunity for the City to reduce the barrier effects that have for so long separated the Downtown from the Waterfront and to develop new, attractive gateways into the City. Where possible every effort must be made to link local transportation improvements into a comprehensive package that is designed to maximize these other non-traffic related benefits. Of course, this effort should be equally applied to the major regional transportation improvements. For example, the proposed Gardiner widening potentially provides the opportunity to improve the lay-out of the street system in South Parkdale, to enhance pedestrian connections to the Waterfront and free-up more land for park or other beneficial uses. Often the full realization of those other types of additional benefits involve costs over and above those purely required for transportation purposes and increasing consideration needs to be given to means of obtaining the extra funding that may sometimes be required to fully exploit the opportunities provided in these situations.